

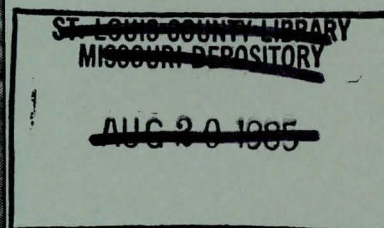
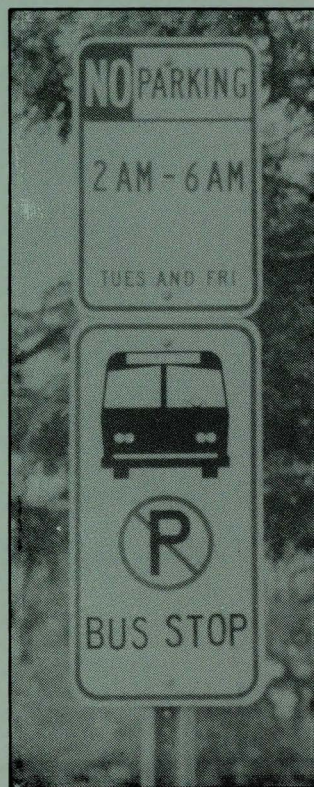
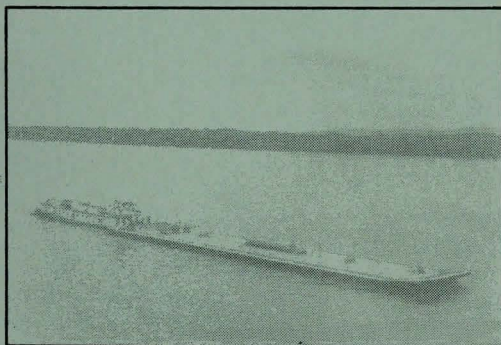
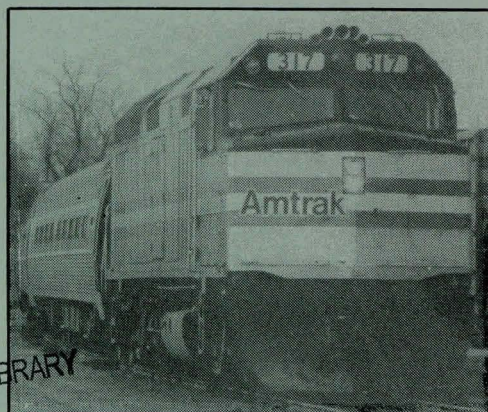
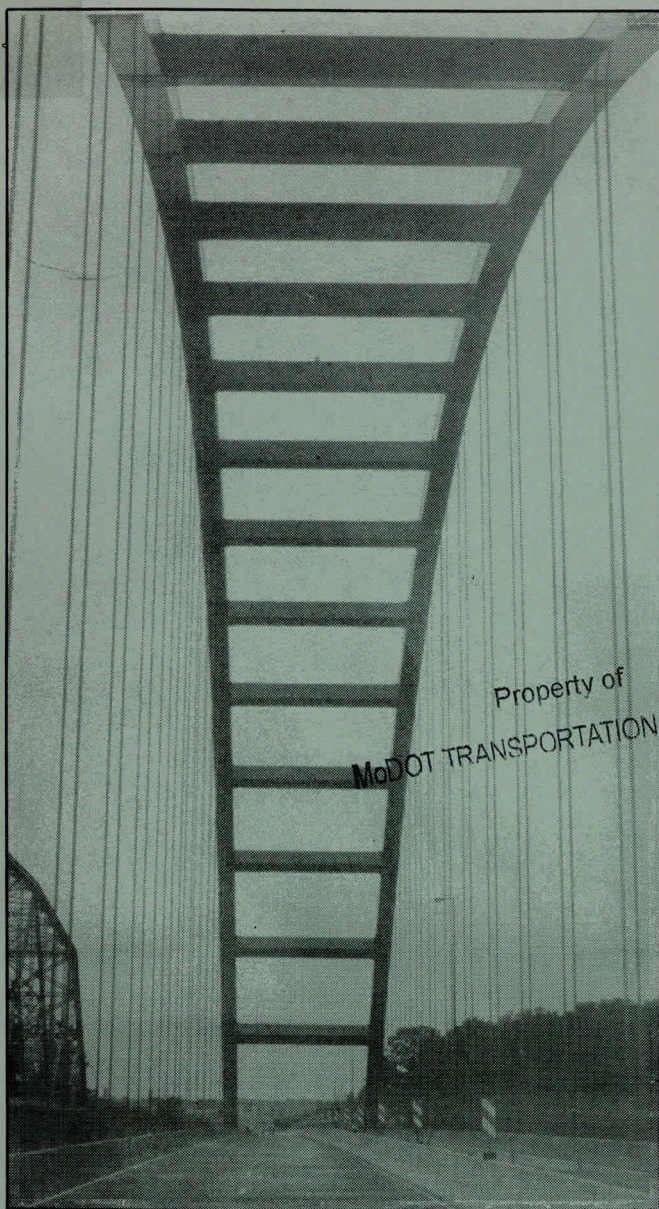
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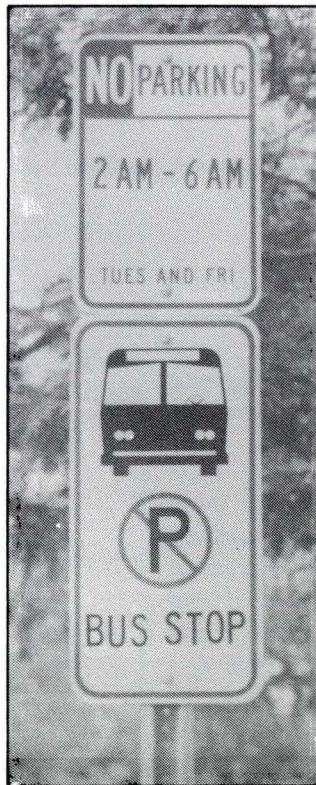
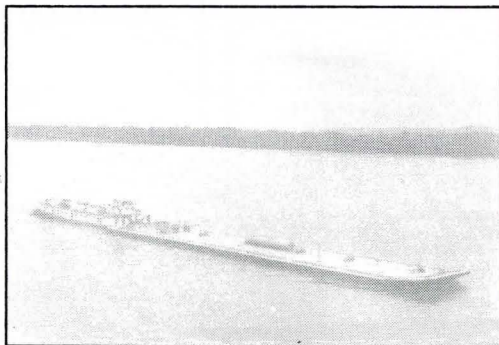
MISSOURI HIGHWAY & TRANSPORTATION COMMISSION

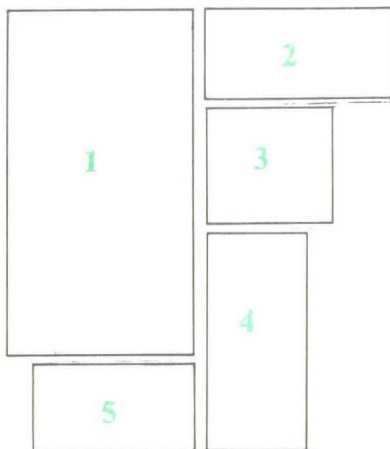
1984 Annual Report



MISSOURI HIGHWAY & TRANSPORTATION COMMISSION

1984 Annual Report





- 1 *The Highway and Transportation Department is responsible for the operation of the 32,000-mile highway system, including highway location, design, construction and maintenance. The Jefferson Barracks Bridge on I-270 at St. Louis is just one of 9,200 bridges maintained by the Department on the state highway system.*
- 2 *The Aviation Unit promotes aviation as a mode of travel and encourages safety and the development of airports and other aviation facilities.*
- 3 *Railroad Unit activities include rail planning to maintain the railroad as a viable transportation entity, rail service assistance projects and rail passenger service operation under the Amtrak program.*
- 4 *The Transit Unit administers state and federal programs relating to general public transportation and specific programs for the elderly and handicapped.*
- 5 *The Waterways Unit provides technical assistance to port authorities in promoting private capital investment, in increasing the volume of commerce and in establishing a free trade zone within their port districts.*



Missouri Highway and Transportation Commission

Eugene J. Feldhausen,
Kansas City, Chairman
Carl E. Yates,
Springfield, Vice Chairman
Wm. F. Schierholz,
Des Peres
Helen T. Schnare,
St. Charles
Paul L. Ebaugh,
Cape Girardeau
C.R. "Dick" Johnston,
Jefferson City

Robert N. Hunter,
Chief Engineer

Bruce A. Ring,
Chief Counsel

Mari Ann Winters,
Commission Secretary

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Contents

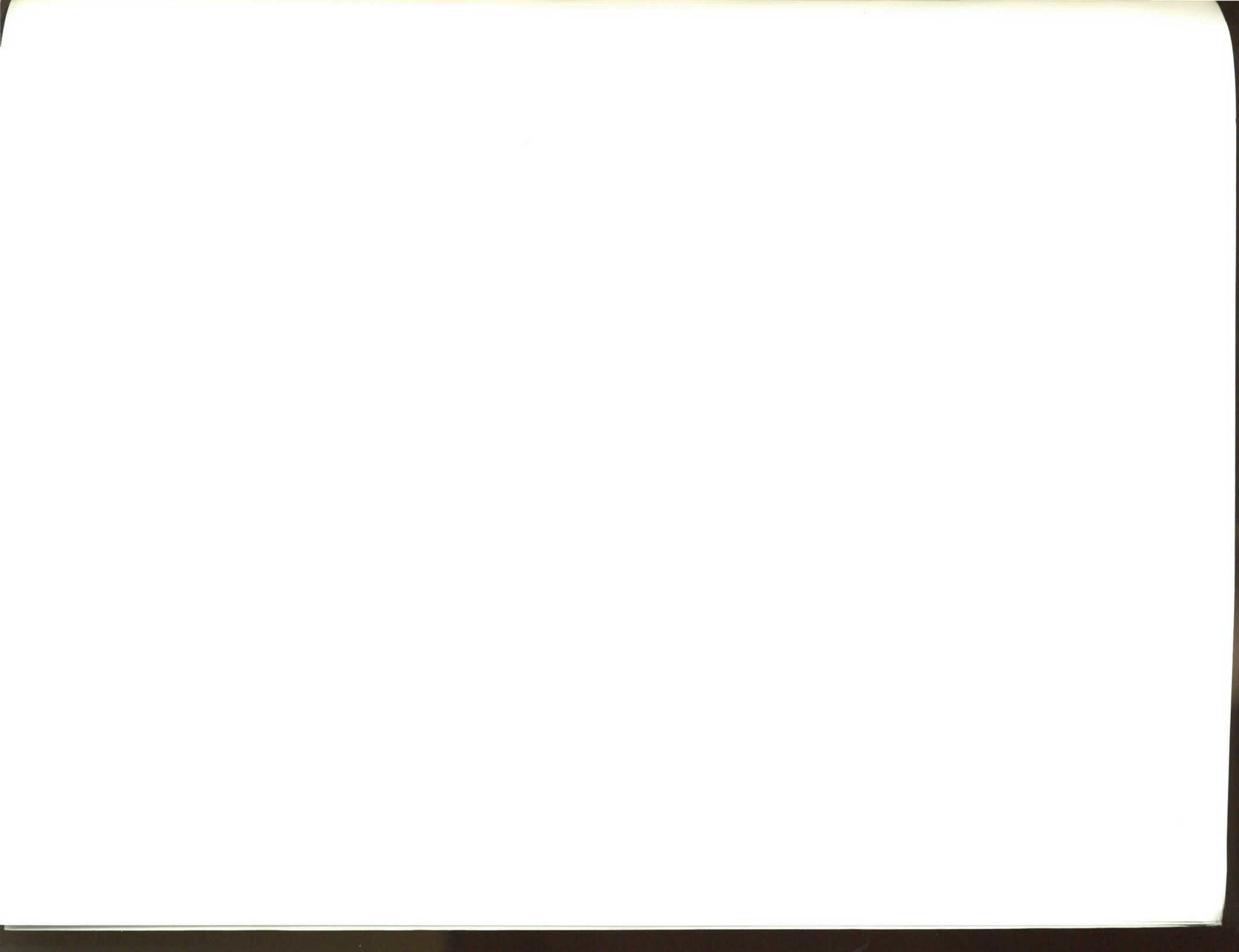
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This annual report details the highway and transportation system status and the accomplishments and finances of the Missouri Highway and Transportation Commission for calendar year 1984. The report is assembled in a style meant to provide easy access to needed information. Brief descriptions of the functions of each unit within the Highway and Transportation Department are included.

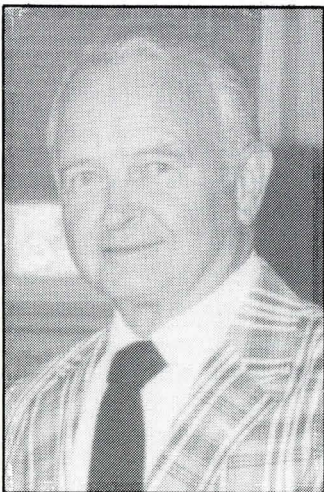
An informed and interested public is vital to the continuing

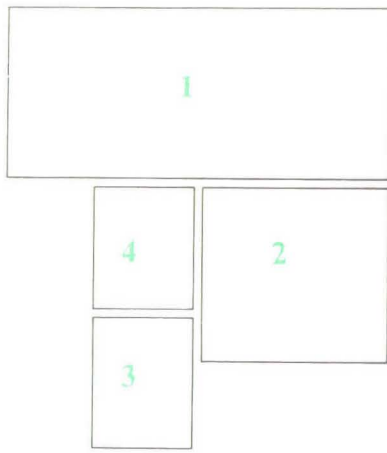
development and operation of Missouri's highway and transportation programs. Therefore, copies of this report are available to the media, public officials and interested citizens. As required by law, it is sent to the governor. The report is also distributed to members of the General Assembly.

The Department hopes this report increases taxpayer's understanding of Missouri's Highway and Transportation Department and its administration. Inquiries are welcome.



Organization





- 1 *The Missouri River Bridge at Jefferson City was just one of 6,583 bridges on the state highway system inspected during the year. Thirty-seven of these bridges are Missouri or Mississippi River crossings.*
- 2 *Supreme Court Justice Andrew J. Higgins swears in Commissioner C.R. "Dick" Johnston in ceremonies held Feb. 17, 1984.*
- 3 *Chief Engineer Robert N. Hunter*
- 4 *The health of every organization is dependent upon cooperation and teamwork on the part of its personnel.*

The Commission

The Centennial Road Law established the first State Highway Commission in 1921. The law created a bi-partisan commission of four people who would each serve six years.

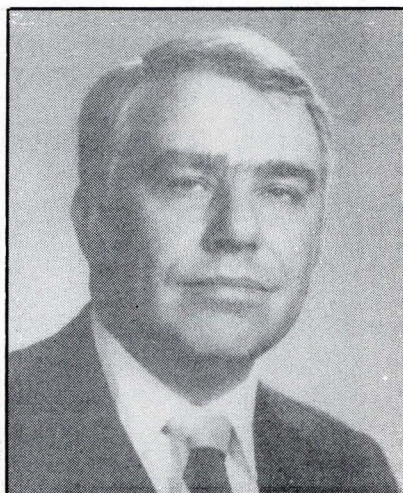
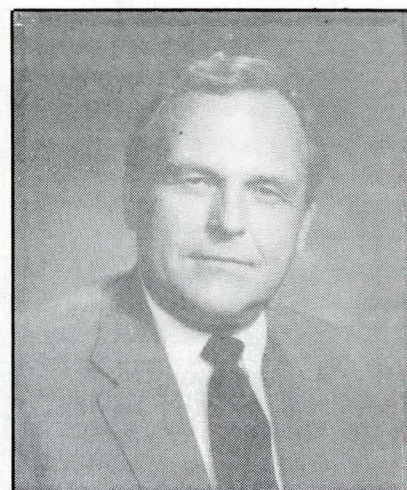
Since 1921 the responsibilities of the Department have increased and so has the size of the Commission. In 1956 the number of members was increased to six.

The Governor, by and with Senate consent, appoints Commission members to staggered six-year terms. No more than three members of the Commission can belong to the same political party.

The commission meets at least once a month to hear delegations, establish policies and approve Department business. Members appoint the Department's chief engineer, chief counsel and secretary to the commission.

EUGENE J. FELDHAUSEN

Eugene J. Feldhausen, Platte City, is the current chairman of the Commission. He was appointed to a six-year term by Governor Teasdale in December 1979. Feldhausen was chosen chairman in December 1983. He holds bachelor of science and juris doctor degrees from the University of Missouri, and he is currently practicing law with Feldhausen and Eskridge, P.C.

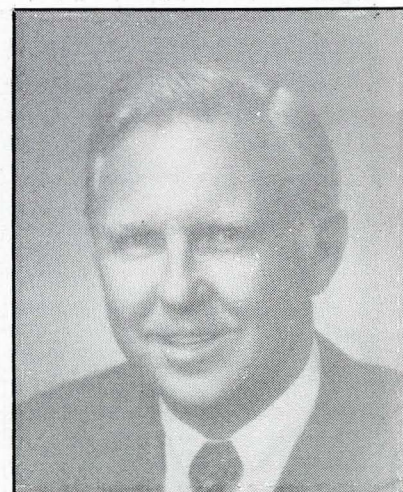


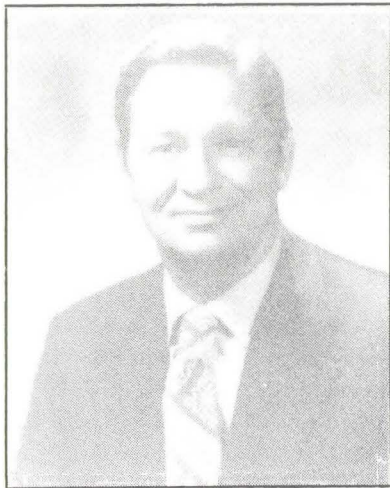
CARL E. YATES

Carl E. Yates, Springfield, is currently the vice chairman of the Commission. He was appointed to a six-year term by Governor Teasdale in December 1979. He was named vice chairman in December 1983. Yates holds a bachelor of arts degree from Southwest Missouri State University and a juris doctor degree from Washington University. He is currently practicing law with Yates, Mauck and Robinett Inc.

WILLIAM F. SCHIERHOLZ JR.

William F. Schierholz Jr., Des Peres, is president of Chemtech Industries Inc. He was appointed to a six-year term by Governor Bond in January 1982. Schierholz received a bachelor of science degree from Washington University. He also served in the U.S. Army Air Force from 1942 to 1946. He is currently involved in many civic activities in the St. Louis area.



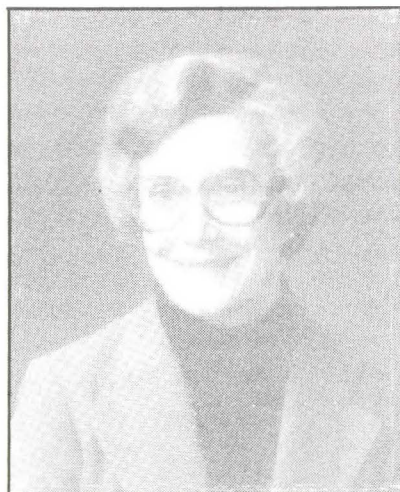


C.R. "DICK" JOHNSTON

C.R. "Dick" Johnston, Jefferson City, is the newest member of the Commission. He was appointed by Governor Bond to a six-year term, which he began in February 1984. Johnston is president of the Missouri Farm Bureau, an organization of some 75,000 member families. He has served on various councils and boards including the University of Missouri Board of Curators from 1975 to 1982.

PAUL L. EBAUGH

Paul L. Ebaugh, Cape Girardeau, is also a new member to the Commission. He was appointed by Governor Bond to a six-year term, which he began in January 1984. He is a graduate of Baltimore City College and is a former president of Cape Construction Company. Ebaugh is very active in community affairs in the Cape Girardeau area.



HELEN T. SCHNARE

Helen T. Schnare, St. Charles, is another new member of the Commission. Governor Bond appointed her to a six-year term, which she began in January 1984. Schnare received a bachelor of science degree from Southeast Missouri State University and a master's degree from the University of Wisconsin-Madison. She is a former teacher in the St. Charles School District.

Responsibilities

—Supervise highways and bridges constructed, improved and maintained by state money or monies appropriated by the U.S. government, in keeping with acts of Congress

—Make rules and regulations consistent with law, fixing all duties of persons employed by the Commission

—Aid county highway engineers or officials of other civil subdivisions in establishing alignments and gradients, and in preparing suitable systems for highway and bridge maintenance

—Authorize preparation of standard plans, specifications and estimates for repair and improvement of highways and construction and repair of bridges by civil subdivisions

—Investigate and determine best construction and maintenance methods of roads and bridges

—Aid at all times in promoting highway improvement

—Let all contracts for state highway construction or improvement

—Prescribe an auditing and accounting system for all road and bridge monies for highway officials' use

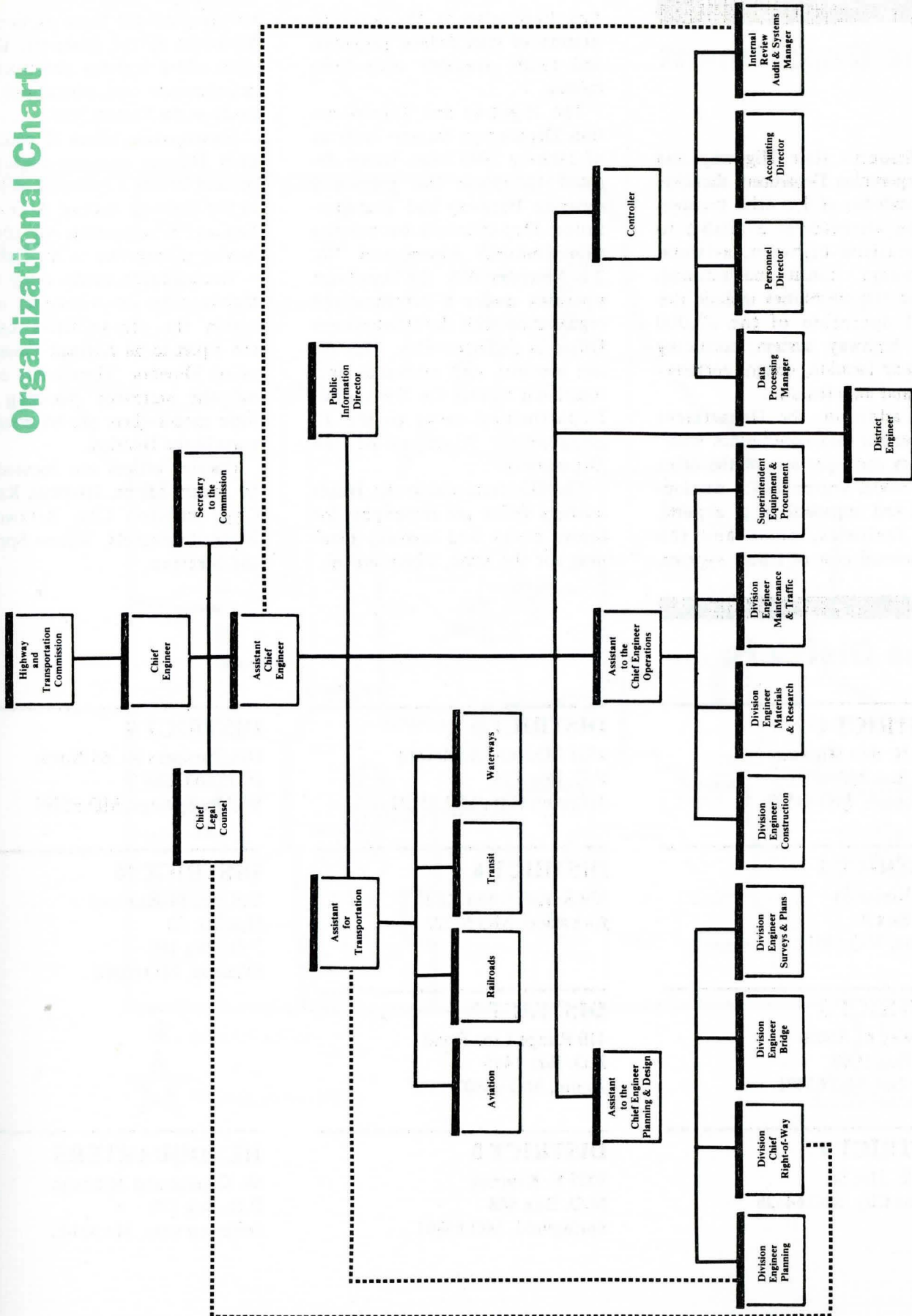
—Construct under its own direction all state roads, culverts and bridges

—Compile statistics relating to public highways throughout the state

—Aid in developing other transportation modes: transit, waterways, rails and aviation

—Consider applications for organization of city or county port authorities, as well as appointment of bridge commissioners

Organizational Chart



The Department

Missouri's state Highway and Transportation Department shoulders responsibilities of five viable transportation alternatives available to Missourians--highways, aviation, waterways, transit and railroad. Those responsibilities include the total operation of the 32,000 mile highway system, including highway location, design, construction and maintenance.

In addition, the Department cooperates and coordinates with owners and operators of the other four modal systems in the development and improvement of airports, rail facilities, ports and the operational cost of transit systems.

Key here also is the administration of state/federal programs and funds available with these modes.

The Highway and Transportation Department became such as of January 1980 when voters decided to merge the previously separate Highway and Transportation Departments by passing Constitutional Amendment No. 2 in November 1979. The Department operates under a decentralized organization with the Headquarters Office in Jefferson City. This office provides staff assistance and functional control for the various Departmental tasks to the 10 geographic Districts of the Department.

The Divisions within the Headquarters Office are responsible for bridge design and highway planning for the state. There are no

counterparts for these particular Divisions in the Districts. Decisions about highway construction, maintenance and operations are made at the District level.

Encompassing about 12 counties, each District contains about 10 percent of the total road mileage in the highway system. A District Engineer is responsible for administering all activities in his District.

Transportation modes other than highways are established as units within the Headquarters Office and report to an Assistant Transportation Director. These units carry out the statewide planning for these modes--there are no counterparts in the Districts.

District offices are located in St. Joseph, Macon, Hannibal, Kansas City, Jefferson City, Kirkwood, Joplin, Springfield, Willow Springs and Sikeston.

The Districts

DISTRICT 1

3602 N. Belt Highway
P.O. Box 287
St. Joseph, MO 64502

DISTRICT 2

U.S. Route 63
P.O. Box 8
Macon, MO 63552

DISTRICT 3

Highway 61 South
P.O. Box 1067
Hannibal, MO 63401

DISTRICT 4

5117 E. 31st St.
Kansas City, MO 64128

DISTRICT 5

1511 Missouri Boulevard
P.O. Box 718
Jefferson City, MO 65102

DISTRICT 6

329 S. Kirkwood Road
Kirkwood, MO 63122

DISTRICT 7

410 Range Line Road
P.O. Box 1445
Joplin, MO 64802

DISTRICT 8

3025 E. Kearney
M.O. Box 868
Springfield, MO 65801

DISTRICT 9

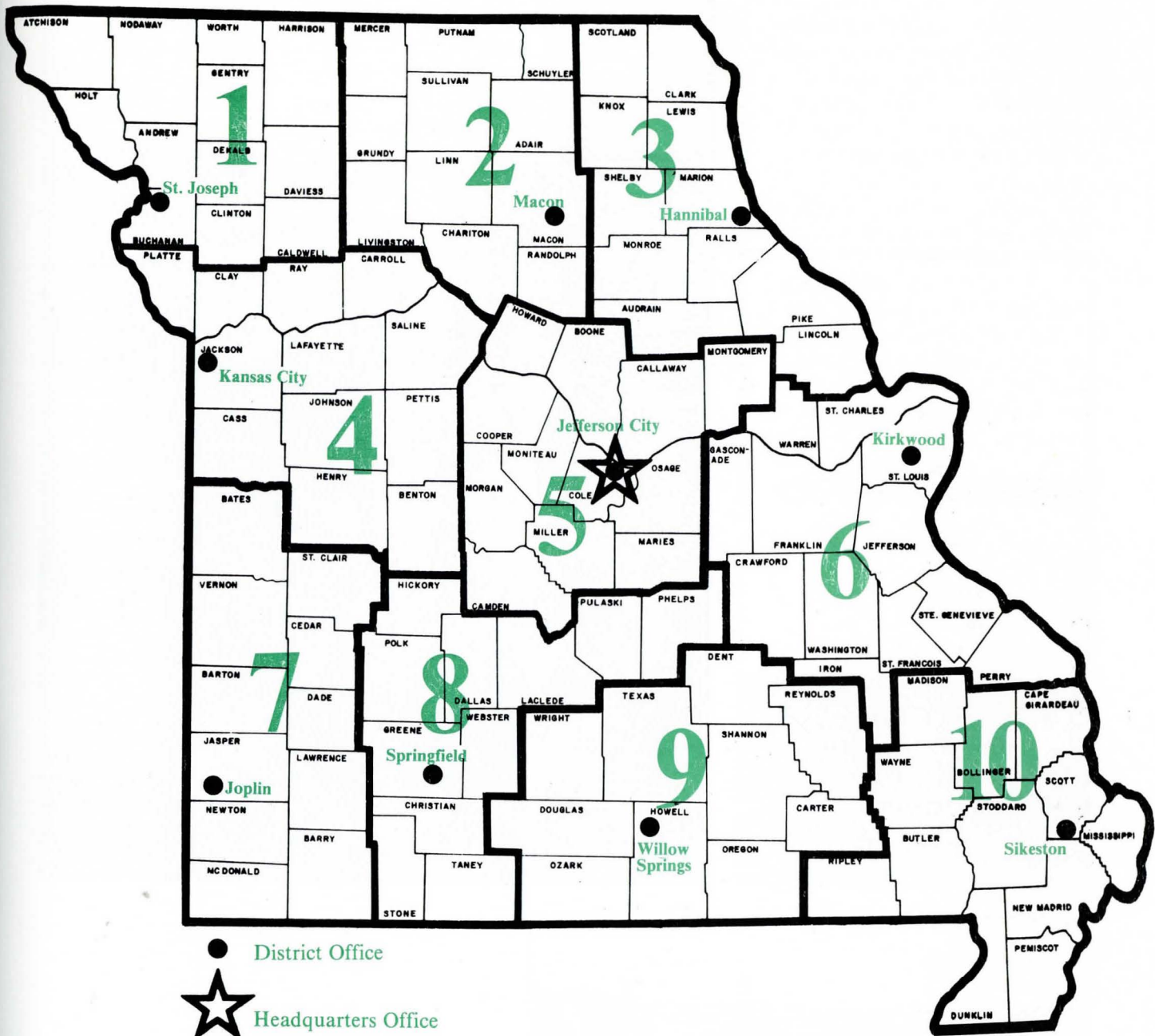
U.S. Business Rt. 63 North
P.O. Box 220
Willow Springs, MO 65793

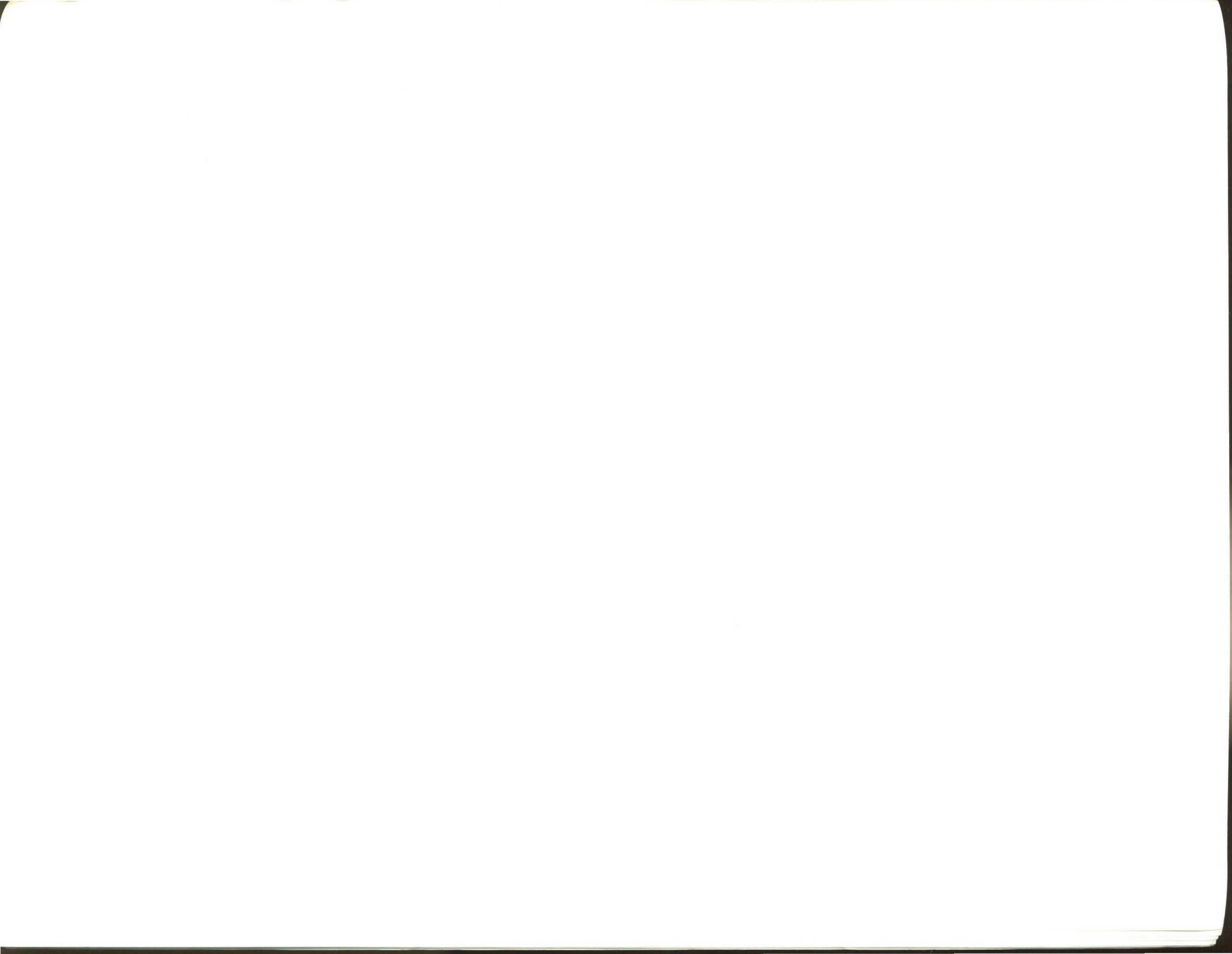
DISTRICT 10

U.S. Rt. 61 North of
U.S. Rt. 60
P.O. Box 160
Sikeston, MO 63801

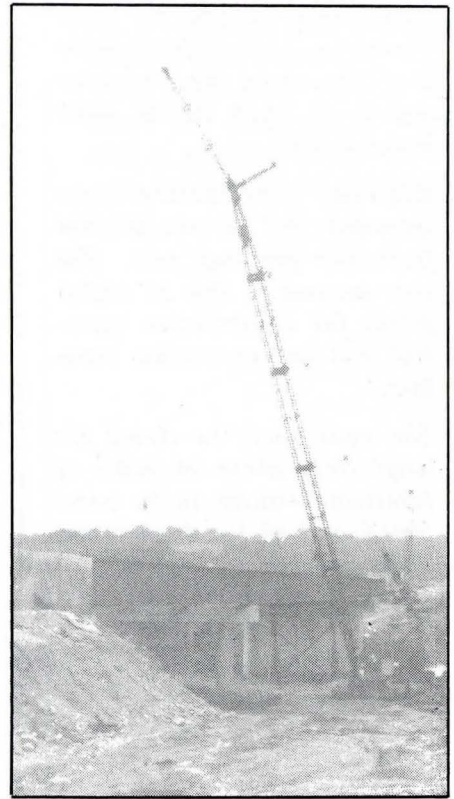
HEADQUARTERS

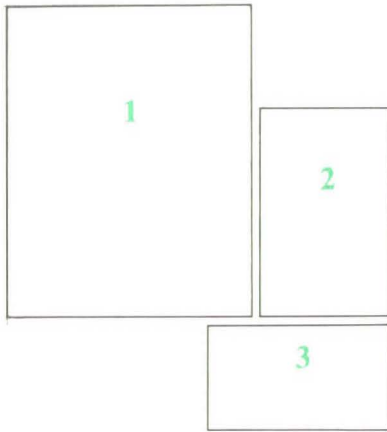
W. Capitol and Jefferson
P.O. Box 270
Jefferson City, Mo 65102





Profiles





- 1 *Missouri motorists set an all-time travel record of 27.99 billion miles during the year. That's a 1.30-billion-mile increase over the previous record of 26.70 billion miles driven in 1983.*
- 2 *Highway construction costs increased 16.7 percent in 1984 from the previous year. The cost increase is due to higher prices for construction materials and for construction activities.*
- 3 *The road won't be closed for long! Only about 26 miles of Interstate remain to be completed, and all but 4 miles are under contract.*

HONORING THE MEMORY OF A FRIEND



Wilben H. Dill

March 1, 1924 - October 14, 1984

A distinguished career came to a close with the death of Bill Dill on October 14, 1984. The assistant to the chief engineer - operations had given 35 years of his life to the Missouri Highway and Transportation Department, and he will be fondly remembered by those whom he worked with, laughed with and shared with.

Born 60 years ago in Hominy, Oklahoma, Mr. Dill grew up in Sullivan, Missouri, and received his early education in the Sullivan Public Schools. He graduated in 1949 from the University of Missouri at Columbia with a bachelor of science degree in chemical engineering. While still a college student, he joined the Department in 1947 as an engineer inspector I at the Main Office and embarked upon a career that took him through numerous phases of highway and transportation work while serving the people of Missouri. In 1970 he was promoted to the

administrative position he held at the time of his death.

During his years of service, he also held the positions of engineer inspector II and III, division materials engineer, senior engineer I and II, district materials engineer, district engineer assistant, senior engineer III, District 8 engineer, District 4 engineer and Maintenance and Traffic Division engineer. In addition to serving at the Main Office and Districts 4 and 8, he also worked in District 2 early in his career.

But Mr. Dill was devoted to more than just his daily work. He was a member of the National Society of Professional Engineers, the Missouri Society of Professional Engineers, the American Association of State Highway and Transportation Officials, the American Road and Transportation Builders Association and the Missouri Highway Employees Association. He belonged to the First Baptist Church in Jefferson City. The World War II veteran was also a member of the Jefferson City Lodge No. 43 AF & AM, Ezra Council No. 32 R & SM, the Jefferson City Chapter No. 34 RAM, the

Prince of Peace Commandery No. 29 KT, the Capital Shrine Club and the Moolah Temple — St. Louis.

Mr. Dill is survived by his wife, Dorothy, Jefferson City; two children, Sherida S. Dill, Wichita, Kansas, and Janice K. Allen, Columbia; and one grandson, Jeffrey Allen.

This tribute is to an individual and a leader who performed his work with a highly commendable ability, dedication and fairness. We salute these fine qualities that earned him the respect and admiration of his co-workers and all others whose lives he touched.

We hope these parting words honor the memory of a man with a generous heart and gracious manner whom many called friend.

KLAMM APPOINTED ASSISTANT CHIEF ENGINEER - OPERATIONS



A 37-year Department veteran was named assistant chief engineer-operations. Carl E. Klamm, 62, Jefferson City, assumed his new duties Nov. 15. Klamm had been serving the

Department as Planning Division engineer. He succeeded Wilben H. Dill, who died Oct. 14.

As assistant chief engineer-operations, Klamm oversees activities of the Construction, Materials and Research, Maintenance and Traffic, and Equipment and Procurement divisions.

Klamm began his career with the Department as an engineer inspector in the Jefferson City Main Office in 1947 after graduating from the University of Missouri-Columbia with a bachelor of science degree in civil engineering.

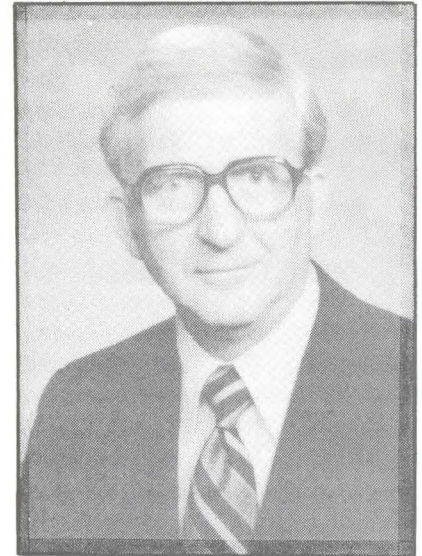
He has held a variety of positions with the Department including engineer inspector III, project engineer, resident engineer, district construction engineer, district engineer assistant, senior engineer III, District 9 engineer, District 4 engineer and Construction Division engineer. He was named Planning Division engineer in 1972. During his career Klamm's positions have taken him to Districts 4, 5, 8 and 9. He is also a professional engineer.

Klamm, 62, was born in Parkville. He graduated in 1940 from North Kansas City High School. Klamm is a World War II veteran, having served in the U.S. Army Field Artillery from 1943 to 1946 in the Pacific Theater. At the time of his discharge, he was a first lieutenant.

Klamm married the former Billie Kile of Tulsa, Oklahoma, in 1944. They have three children and five grandchildren.

Klamm is a member of the American Society of Civil Engineers and the Missouri Society of Professional Engineers. He is also a member of the Presbyterian church.

VANDELICHT NAMED PLANNING DIVISION ENGINEER



A 35-year veteran of the Department was named to head the Planning Division at the Main Office in Jefferson City. Walter F. Vandelicht, who was previously district engineer in the District 1 St. Joseph area, assumed his new position Nov. 15. He succeeded Carl Klamm who was promoted to assistant to the chief engineer-operations.

As planning division engineer, Vandelicht oversees the collection and processing of highway data, research to determine highway needs and the development of the program for highway improvements.

Vandelicht is a 1949 graduate of the University of Missouri-Columbia where he received a bachelor of science degree in civil engineering. He joined the Department as an assistant plans designer in the District 5 Jefferson City area. While in school, Vandelicht worked for the Department during the summer months.

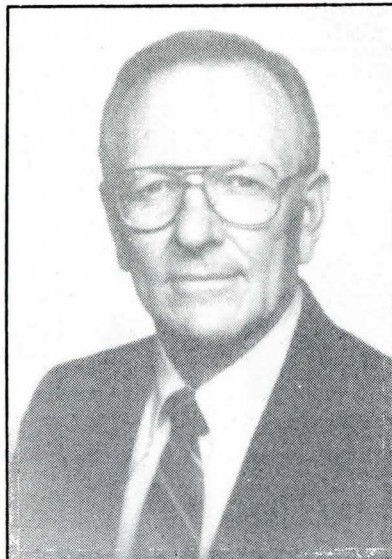
During his career Vandelicht has also held the positions of plans designer; plans designer

III; chief designer; district surveys and plans engineer; district engineer assistant; senior engineer III; urban planning engineer; assistant division engineer - highway planning and traffic; assistant director of planning - research and traffic; and assistant division engineer of planning - research and traffic.

Vandelicht, 57, was born in Steedman. He received his early education in the Steedman and Mokane schools. He was married to the late Alice Fogleman Vandelicht of Jefferson City. They have three children -- Anne, John and Mary.

Vandelicht is a member of the American Society of Civil Engineers, the National Society of Professional Engineers and the Missouri Society of Professional Engineers. He is also active in the Masonic Lodge, the Moila Shrine and the Presbyterian church. Vandelicht has received the Silver Beaver Award for distinguished service to boyhood from the Pony Express Council of the Boy Scouts of America.

NEW DISTRICT ENGINEER GOES TO ST. JOSEPH



A 28-year veteran of the Department was named District 1 engineer at St. Joseph. Donald L. Hiatte, utilities engineer in the Surveys and Plans Division at the Jefferson City Main Office, replaced Walter F. Vandelicht who became the Planning Division engineer at the Main Office effective Nov. 15.

As District 1 engineer, Hiatte, 51, will oversee highway and transportation work in the counties of Andrew, Atchison, Buchanan, Caldwell, Clinton, Daviess, DeKalb, Gentry, Harrison, Holt, Nodaway and Worth. Each of the Department's 10 districts contains approximately 10 percent of the state's total mileage.

Hiatte is a 1958 graduate of the University of Missouri-Columbia where he received a bachelor of science degree in civil engineering. He began working for the Department in 1953 as a draftsman I while attending college. He joined the Department full time in 1958 as a designer I in District 6 at Kirkwood.

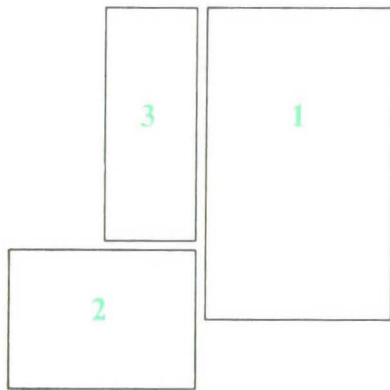
In addition, he has served the Department as a designer II, engineer inspector II, senior engineer I and II, senior planning engineer, highway planning traffic engineer, long-range planning engineer and supplementary highway engineer. He was promoted to utilities engineer in 1981.

Hiatte, a professional engineer, was born in Jefferson City, the son of Albert and Margaret Allison Hiatte. He graduated from New Bloomfield High School in 1950. Hiatte served in the U.S. Army from September 1950 to December 1952. He married the former Barbara Johnson in 1950. They have three children and five grandchildren.

Hiatte has been involved in the reserve component of the military since his release from active duty in 1952. He presently holds the rank of colonel. Hiatte is also active in the Missouri Society of Professional Engineers, having served the group as president in 1977. He is a member of several Masonic organizations, and is also a member and deacon of the First Baptist Church in Jefferson City. Hiatte serves on the board of directors for both the Highway Engineering Association of Missouri and the Missouri Engineering Alumni-Columbia.

Highlights





1 (From left) U.S. Representative Robert A. Young, Missouri, Chief Engineer Robert N. Hunter and former Illinois Secretary of Transportation John D. Kramer snip the satin at the Jefferson Barracks Bridge opening July 11, 1984.

2 One thousand pastel-colored balloons floated into the air with the cutting of the ribbon opening the Vandeventer Overpass Aug. 1, 1984.

3 The Color Guard presents the flags at the ceremony opening the Vandeventer Overpass Aug. 1, 1984.

FEE HIKE MEANS MORE MONEY

The Department received a funding shot in the arm during the year. Governor Christopher S. "Kit" Bond signed House Committee Substitute for House Bill 1045 into law June 7, paving the way for an additional \$42 million to the Department. The bill, which became effective September 1, increased motor vehicle license, driver's license and title fees.

Major provisions of the bill included increasing automobile registration fees by \$12 to \$13.50 per horsepower classification; increasing small truck registration fees by 25 percent for beyond local trucks weighing 24,000 pounds or less; increasing driver's license fees from \$3 to \$7.50; and increasing title fees from \$5 to \$7.50.

The average passenger car license fee was increased from \$19.97 to \$29.82 by this law.

HOW LOW CAN WE GO?

On September 1, Missouri gained the dubious distinction of becoming the state with the nation's lowest gas tax--7 cents per gallon.

Texas, which had held the last-place honor at 5 cents per gallon, doubled its tax to 10 cents per gallon.

Although Missouri has the lowest motor fuel tax, it must support the seventh largest state highway system. The state motor fuel tax was last raised in 1972.

HOOPLA HAILS VANDEVENTER OVERPASS OPENING

Everyone including Chief Engineer Robert N. Hunter and Santa Claus came to celebrate the Aug. 1 opening of the Vandeventer Overpass. Santa, who was really a Laclede Cab Co. driver, carried a sign that read "Thank You, Mo. Hi.-Way Dept. X-Mas in August."

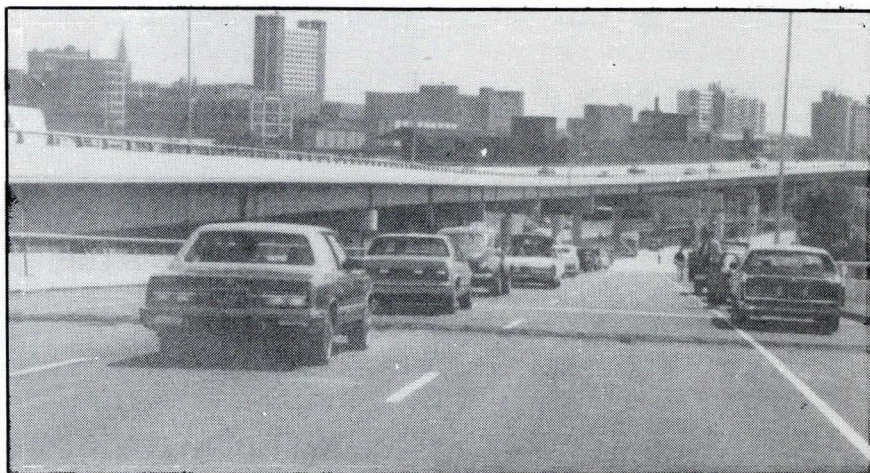
Highway and Transportation Commission Member William F. Schierholz was the keynote speaker at the dedication of the 2.2-mile stretch of Route 40 near downtown St. Louis. A Dixieland band and a calliope provided music for the occasion.

Assorted state and local poli-

ticians and public officials helped cut a red velvet ribbon. With the historic slice, 1,000 pastel-colored balloons floated into the air, and the Vandeventer Overpass opened. A myriad of antique cars and an old English carriage pulled by two dapple-grey horses led a parade of vehicles under the viaduct along the new eastbound lanes.

The project, which extends from Tower Grove to Jefferson Avenue, began in June 1977. The westbound lanes opened July 27, 1983. The total cost of the Overpass was about \$34,047,310.

Work was carried out through the Department's District 6 Office in Kirkwood under the supervision of District Engineer Frank Kriz. Paul Gutzler was the resident engineer.



A parade of vehicles tries out the new eastbound lanes of the Vandeventer Overpass during the opening ceremony Aug. 1, 1984.

A GRAND DAY FOR THE GRAND GLAIZE

A bridge's reflection rippled on the water's surface unbeknownst to the depths 100 feet below. Its railings gleamed in the sunlight. The last traces of construction had been swept away. The day had come.

A new era in Lake travel began Aug. 31 with the opening of the new Grand Glaize Bridge. Carrying U.S. Route 54, the bridge spans the Grand Glaize Arm of the Lake of the Ozarks. From the beginning, this bridge had been a special project.

The new Grand Glaize Bridge qualified with other prestigious bridges, such as New York City's Brooklyn Bridge, to receive federal discretionary funds. Congressman Wendell Bailey was instrumental in securing this funding. The federal government provided \$6,185,000

in November 1981 as their part of the 80-20 federal-state funding program.

The project began March 15, 1982, and was divided into two phases, substructure and superstructure work. Massman Construction Company of Kansas City, Missouri, was the prime contractor for both phases.

The bridge construction was special, too. The contractor used new above-water pier-drilling techniques to set the twelve pier shafts. This kind of construction was a first for Missouri bridges.

Each shaft was anchored into 20 feet of bedrock at the Lake bottom. The shafts were filled with 65,000 pounds of reinforcing steel caging and 306 cubic yards of concrete. Each shaft is 9 feet in diameter and weighs 450 tons.

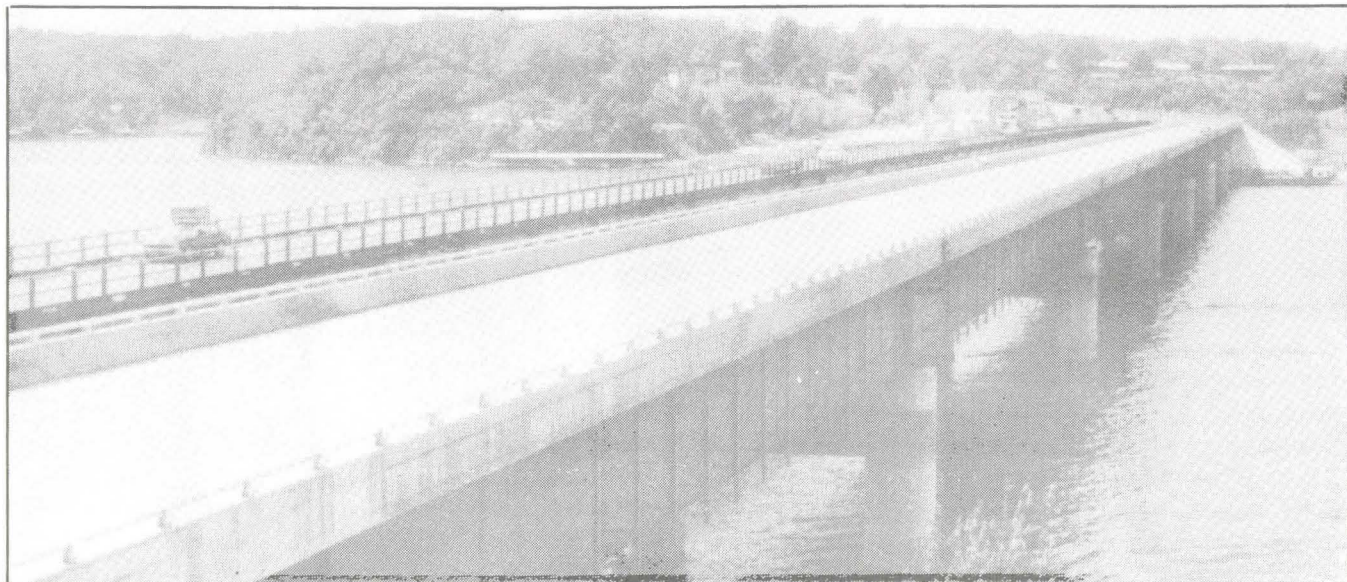
Six-foot concrete caps connect the 12 shafts into six piers. Made of 55.7 cubic yards of concrete and 2,137 pounds of reinforcing steel, each pier cost \$475,000. The piers were topped with 2,889,480 pounds of struct-

ural steel and 2,324 cubic yards of concrete to form the bridge deck.

The bridge stretches 1,649 feet within the total project length of about 3,312 feet. The new Grand Glaize features two 12-foot-wide lanes with 8-foot shoulders.

The Department's District 5 Office in Jefferson City made sure the bridge got the special attention it deserved. Construction was carried out under District Engineer Wayne Muri. Jim Toft and Mel Sundermeyer were the construction engineers. Don Branham was the resident engineer.

The new bridge began its reign at a cost of about \$8.8 million. But it won't have to cross the Lake alone. The old Grand Glaize Bridge, which cost only \$295,400 when it was built in 1930, will remain as a pedestrian bridge. The reflections of old and new will join on the water's surface as the two bridges join the past and future of Lake travel.



The Grand Glaize Bridge stretches across the Lake of the Ozarks awaiting its first motorists. The

bridge opened to traffic Aug. 31, 1984. The old bridge is currently used as a pedestrian crossing.

TRANSIT SECTION HELPS ESTABLISH FACILITY

The Charles L. (Lefty) Robinson Transit/Central Maintenance Facility was dedicated in Jefferson City after three years of planning, surveying, collecting data, determining public transportation needs and finally constructing.

The \$1.2 million facility was funded partially by two U.S. Department of Transportation grants. One was administered by the Urban Mass Transportation Administration (UMTA) and the other by the Federal Highway Administration through the Department's Transit Section.

"This facility represents the largest endeavor the Transit Section has ever been involved with," says David Awbrey, assistant transit director. "The money we were instrumental in helping the City of Jefferson obtain was used for site preparation. The funds UMTA committed were used to actually build the buildings.

"In order to qualify for these funds, the city conducted a study to identify the available sites for the facility and also to identify the need for such a facility."

The complex consists of three structures: a 12,000-square foot bus storage building capable of handling 15 buses; a 20-foot by 60-foot enclosed bus washer; and a 12,000-square foot combined transit/city vehicle facility and office building.

The Jefferson City transit system handles approximately 500,000 one-way trips per year, Awbrey adds. "This is a lot of trips for a city this size when the average number of trips tends to be between 20,000 and 40,000 per year," he says.

TWO OLD LINKS RENEWED IN JULY

Two old river crossings, one in the corner of southwest Missouri and one in the St. Louis area, were renewed in early July.

A new 541-foot bridge, which was dedicated July 10, leads Route 59 across the Elk River at Noel. But it isn't the average bridge. It features a chainlink fence that tops the bridge walls. The Department installed the fence to keep would-be fishermen and swimmers off the bridge for safety reasons.

The Jefferson Barracks Bridge in south St. Louis County is also a little different. It features a 910-foot-long tied arch suspension span, with the top rising 280 feet above the river. The 4,003-foot bridge, which connects I-270 with I-255 across the Mississippi River, was dedicated July 11.

The bridge was jointly funded by Missouri and Illinois along with the federal government. Illinois built the bridge, and Missouri will maintain it.

Both of the older bridges at Noel and St. Louis were later demolished. Eventually, a twin bridge will parallel the new span at St. Louis.



A new 541-foot bridge, which was dedicated July 10, 1984, leads Route 59 across the Elk River at Noel. The old bridge was later demolished.

I-70, 270 INTERCHANGE OPENS FOR TRAVEL

Whether you're traveling through St. Louis on a cross-country vacation or just traveling to and from work, your journey will be safer and easier. The Interstate 70 and 270 interchange has been completely rebuilt and the elevated ramps opened July 27.

This interchange, located in northwest St. Louis County, is the busiest in the state with an average daily traffic flow of more than 220,000 vehicles. The new interchange replaces the cloverleaf interchange that was built in the late 1950s.

Chief Engineer Robert N. Hunter says changes were necessary to accommodate the growth in St. Louis area traffic. "As St. Louis continued to grow, we realized the old interchange would not handle the increasing volume of traffic." Traffic on the interchange has also in-

creased with the expansion of the Missouri River crossing west of the interchange. "The new interchange provides a safer and more efficient means of travel," Hunter says.

Accidents occurred frequently at the old interchange, and the improvements will help solve this problem. The new interchange is fully directional which means each turning movement has its own ramp. Motorists don't have to cross merging lanes while entering or leaving the interchange ramps.

The interchange project included 1.69 miles of construction on I-270, 5.33 miles of construction on I-70 and interchange construction at St. Charles Rock Road. The total cost of the project was about \$43 million.

Work began on the project in 1978 and was completed in six stages. "By working in various stages, we were able to handle the large volume of traffic with the least amount of disruption," Hunter says. "We appreciate the patience of motorists who traveled through the area during the construction work."

BAGNELL DAM GETS REPAIRS

Bagnell Dam received some cosmetic surgery--a deck job--during the year. The dam was closed to traffic Oct. 3, 1983, to allow Union Electric, the dam's owner, to strengthen the structure. The Department followed up with some deck work and resurfacing on Business Route 54. Dignitaries and crowds cheered the dam's face lift on May 24 when a parade of antique cars led motorists across the dam in a grand reopening ceremony--just in time for the tourist season.

MEMORIAL OFFERS LASTING TRIBUTE

Some jobs are riskier than others; some are just plain dangerous.

When you think of the Highway and Transportation Department, you don't usually think of risk and danger. But consider this -- in the short span of 37 years, 86 Department employees have been killed on the job. Most have been maintenance employees, people who are exposed to passing traffic on the highways. But others have been mechanics, survey crew members and resident engineers.

Although the names of those killed on the job appear in Department files, there was no public recognition of their sacrifice until recently.

On April 2 three walnut plaques containing the names of those 86 were hung on the wall of a busy corridor near the Commission hearing room in the Main Office.

The plaques were given to the Department by the Highway and Transportation Employees Association. Each plaque contains 40 metal plates engraved with the employee's name and the date he died.

The idea for the memorial came from John Ostrander, the state Association's vice-president," says William Yarnell, who works in

the Main Office Surveys and Plans Division and is also state Association president.

"John mentioned to the state Board of Directors the idea of doing something to remember the employees who have been killed. The result is the plaques."

Since the Workmen's Compensation program was started in 1946, and its files list the cause and place of death, the Association began the memorial's list of names there.

Yarnell says the earliest listed death is that of Cal Mumy, a District 7 employee who died Feb. 13, 1946, when he was struck by a car. "There were many employees killed on the job prior to this date, but it is impossible to tell from the early records whether they died off the job or at work," Yarnell says.

Department Chief Engineer Robert N. Hunter says the plaques are a fitting tribute. "I'm pleased with the Association's gesture of developing this idea

and furnishing these plaques. It shows their concern for safety and for the impact of these incidents that resulted in the loss of the lives of valued employees," he says.

Wendell Hubbs, assistant accounting director in the Main Office Accounting Division, says, "I think the memorial humanizes the Commission and the Department. I was particularly interested because I had a friend in District 10 who was killed on the job. I was pleased to see he was recognized for his sacrifice."

Genora Langdon, a senior stenographer in the Commission secretary's office, feels the memorial is a nice idea. "Working on the roads is dangerous work, and it's nice the Department recognizes and appreciates the efforts of the people who died while doing those jobs."

Although these 86 employees are gone, thanks to other concerned employees, they will not be forgotten.

INTERSTATE DESIGNATED AS DILLINGHAM FREEWAY

Interstate 670, now under construction between Kansas City, Mo., and Kansas City, Kan., will be named after Jay B. Dillingham, a local resident long active in area transportation and civic affairs.

The two-mile section of Interstate highway is located between 14th and Pennsylvania in Kansas City, Mo., and Interstate 70 in Kansas City, Kan.

The decision to name the highway the Dillingham Freeway was made by the Missouri Highway and Transportation Commission at its May meeting.

After consulting with community and municipal leaders, the Commission made the designation as a tribute to Dillingham and as an expression of appreciation for a lifetime of service and leadership to the state and the community.

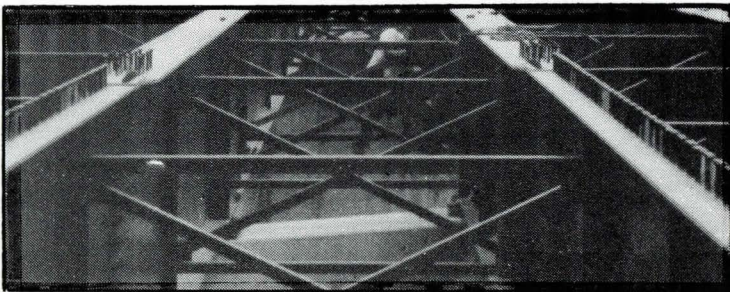
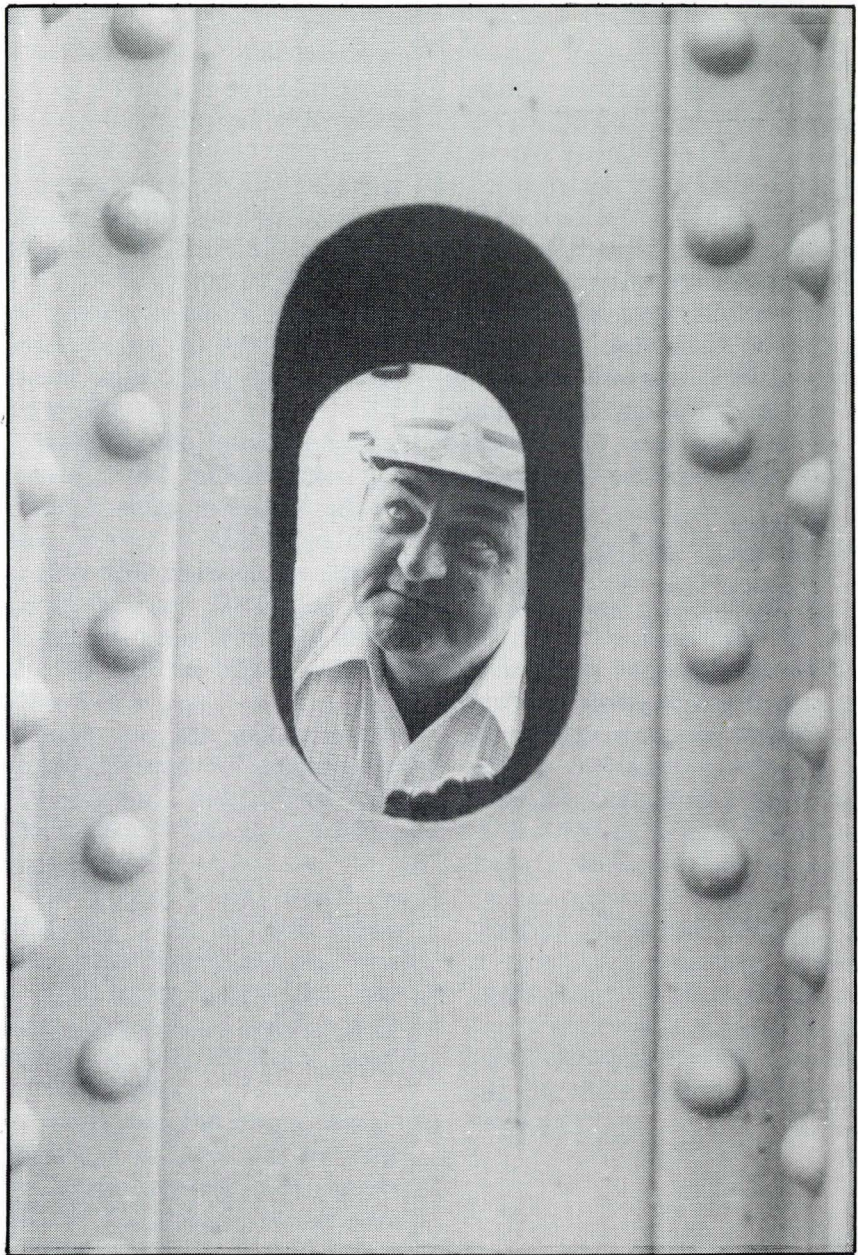
Dillingham was a member of the Commission for six years, serving as its chairman from 1978 to 1983.

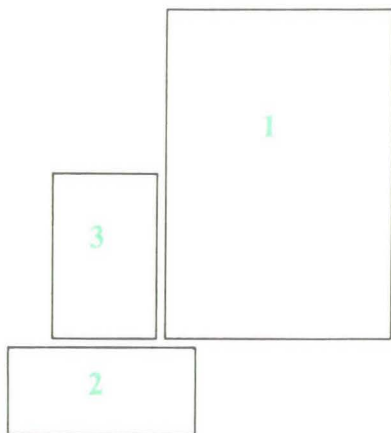


Highway Association members Bill Yarnell (left), president, Ruth Ellis, secretary, and John Ostrander, vice president, display one of the plaques honoring those killed while working for the Department. The plaques were dedicated April 2, 1984.



Operations





- 1 *Bud Haller, general superintendent-bridge repair and MHTD August Employee of the Month, gets an inside view. Repair crews completed structural repairs on 133 bridges during 1984. Thirteen other structures were repaired because of collision damage.*
- 2 *During 1984, 26,464 feet of new bridge structures were contracted for at a cost of \$51,087,486.*
- 3 *The Department awarded 222 construction projects during the year.*

CONSTRUCTION COSTS POST INCREASE

Highway construction costs increased 16.7 percent in 1984, while the number of bids per project decreased slightly, Department figures indicate.

During 1984 bids were taken on 348 projects worth \$329.2 million. The average number of bids per project was 4.05. However, in 1983 bids were taken on 325 projects worth \$316.7 million. The average number of bids per project was 4.75.

The cost increase is due to higher prices for construction materials such as concrete, steel and asphalt and for construction activities such as earth moving.

MOTORISTS SET ALL-TIME TRAVEL RECORD

Missouri motorists drove 4.9 percent more miles on the state highway system in 1984 than they did in 1983 and established an all-time travel record while doing so.

Department Chief Engineer Robert N. Hunter says travel in 1984 reached 27.99 billion miles, a 1.30 billion mile increase over the previous record of 26.70 billion miles driven in 1983. The old record was 25.38 billion miles set in 1978.

Travel on the Interstate system increased 617 million miles (6.7 percent), going from 9.26 billion miles in 1983 to 9.88 billion miles in 1984, while travel on the primary system increased 372 million miles (4 percent), going from 9.19 billion in 1983 to 9.56 billion miles in 1984, Hunter says.

Travel on the supplementary system increased 319 million miles (3.9 percent), going from 8.23 billion miles in 1983 to 8.55 billion miles in 1984.

The highest travel month in 1984 was June at 2.62 billion miles, while January was the lowest at 1.93 billion miles. The June figure exceeded the previous high month of July 1978 by about 65 million miles.

Hunter says the overall travel increase is probably due to stable fuel prices, generally mild weather and the use of more fuel-efficient vehicles.

Traffic volume data is obtained from a number of permanent traffic recording stations the Department operates throughout the state.

SPEEDERS THREATEN FEDERAL FUNDS

Highway speeders were a source of concern for the Department and the Missouri State Highway Patrol during the year. In the third quarter of fiscal year 1984 (April, May, June), 50.7 percent of the vehicles sampled exceeded 55 miles per hour. Not only did these speeders endanger lives, but they also endangered the Department's receiving of about \$8 million of highway construction money.

The Patrol launched a campaign to slow the speeders down to save lives and to prevent loss of the funds, which can occur if more than 50 percent of the sampled vehicles exceed the 55 mile per hour speed limit during the fiscal year.

And thanks to the efforts of motorists, the Patrol and the news media for helping publicize the Patrol's crackdown, the percentage of speeders decreased to 36.6 percent in the fourth quarter of the fiscal year (July, August, September).

The Federal Highway Administration monitors these quarterly percentages. The Department compiles vehicle speed figures from a number of recording stations throughout the state. Highway funds sanctions are based on the yearly percentage of those exceeding 55 miles per hour for the fiscal year.

CHESTERFIELD AIRPORT CHOSEN FOR FLIGHT STATION

The Spirit of St. Louis Airport in Chesterfield has been selected as the site for a new automated flight service station facility.

The facility will provide weather information, airport advisories and accept flight plans for general aviation traffic in eastern Missouri and southern Illinois, according to Lloyd Parr, head of the Department's Aviation Division.

The station will be one of about 60 such stations in the nation. The stations are operated by the Federal Aviation Administration.

Missouri will be one of the few states in the nation with two facilities. Construction will begin soon on one at the Columbia Regional Airport.

In addition to increasing the safety of general aviation the Spirit of St. Louis facility is expected to add about \$2.5 million annually to area payrolls, Parr says.

MHTD TRIES TO STOP SLIPPIN' AND SLIDIN'

Research and innovation are the two keys to finding better ways of building highways. Both are constant jobs, and work on Route 77 just north of Chaffee is a good example of how the Department is keeping pace.

An experimental project is being used to evaluate the effectiveness of using a pressure-injected slurry, which is an insoluble mixture, as a means of slide stabilization. If the method works, it can be used to improve the stability of certain soils and could possibly be a boon to solving many slide problems around the state.

The Chaffee site was selected because it is a spot that has been plagued by slide problems for many years. Slopes have been failing on all quadrants of the Route 77 approach fills to a structure crossing over the St. Louis and Southwestern Railroad tracks. These frequent slope slides are the result of the highly plastic clay soil so common in the southeastern part of the state.

During dry periods the soil dries and cracks, leaving a maze of fissures or deep cracks. When the rains come, these dry cracks fill up, the water is absorbed and softens the clay, and hydrostatic pressure then makes the clay begin to "slip and slide." Hydrostatics deals with liquids at rest and the pressures they exert.

The traditional method of repairing such slides is to have a bulldozer push all the soil back, compact it and then replant the ground cover. But that doesn't solve the basic problem of the cracking and the hydrostatic pressure.

The method being tested in the present experiment involves the injection of lime and lime-fly ash slurries into the soil.

The use of lime is nothing new. It is known that lime reacts with most clay soils and changes the "plasticity"--that is, it improves and strengthens the soil characteristics to give it more stability.

What makes this particular experiment new is that a slurry is injected under pressure into the soil. The lime or lime-fly ash is mixed with water into the slurry. The mix is then pumped to a tractor that has four pipe probes attached to the front. These probes are hydraulically forced into the slope to a planned depth, either 10 or 12½ feet. The tips of the probes dispense the slurry in a 360-degree pattern as it is pumped into the fill. Injection pressures range from 50 to 200 pounds per square inch.

Injection to the specified depth can be made at 12- to 18-inch intervals or in a slow continuous push. Either way the injection continues until the required quantity has been dispensed.

The average quantity of lime injected per hole is from 120 to 225 pounds. The fly ash injection will be from 200 to 300 pounds and from 60 to 200 pounds if there is a second injection.

It is hoped that these slurry treatments will strengthen the soil. The slurry fills the fissures and reacts with the soil. It is also hoped that it will reduce the



An experimental project on Route 77 near Chaffee is testing the effectiveness of using a pressure-injected slurry as a means of slide stabilization. A lime-fly ash slurry is pumped to a tractor that dispenses the mixture into the slope through probes.

capacity of the fill to absorb rain water.

Another advantage of the pressure injection is that the pressure causes hydraulic fracturing of the soil as it is being injected, and this puts more lime in contact with the clay.

Department officials emphasize that this is an experimental project, however, and no one really knows if the method will work. Performance is being monitored by personnel of the Department's Division of Materials and Research.

Soil samples will be obtained for comparison of physical properties with those from previously obtained samples. A row of iron fence posts will be set in a straight line at about mid-slope to aid in detecting any movement of the slope. Periodic inspection will include visual observations, photographic records of slope surface

conditions and records of the extent and type of any deterioration observed. Inspections will continue for two years unless earlier failure indicates the study should be ended.

In addition, all findings will be furnished to the Federal Highway Administration which has expressed an interest in the potential for this method of slide stabilization. The final report will include recommendations for future use.

If successful, the method could save the Department—and taxpayers—time and money in the future. During the past fiscal year, approximately \$1 million was spent on slide correction around the state. The repair of small slides ate up nearly \$850,000. Two major slides required an additional expenditure of more than \$70,000 during the same period. Nearly 23,000 manhours were spent on slide correction alone during the period.

AMTRAK TRAINS RANK NO. 1 AND 2 IN NATION

Missouri's short-distance Amtrak trains—the Ann Rutledge and the St. Louis and Kansas City Mules—are traveling on the right track.

Rail Travel News announced during the year that for the period Oct. 30, 1983, through April 28, 1984, the Ann Rutledge was chosen No. 1 of all short-distance trains in the nation in a rider survey. The Mules followed closely in the No. 2 position. In the previous survey, the Ann Rutledge ranked eighth.

Robert N. Hunter, chief engineer of the Department, said the results of the survey reflect an overall improvement in Amtrak trains since Missouri became involved in helping provide passenger service. The Department partially funds the Ann Rutledge and the Mules.

Short-distance routes are those 500 miles or under. The rating scale for the survey ranged from a one for extremely poor to a nine for extremely good. The Ann Rutledge received a 7.7 overall rating, and the Mules received a 7.6 rating. Some of the services rated were scheduling, car cleanliness, food quality and station condition.

The Missouri trains serve Kansas City, Independence, Lee's Summit, Warrensburg, Sedalia, Jefferson City, Kirkwood and St. Louis.

MISSOURI BRIDGES STILL FACE TROUBLED WATERS

Troubled waters still lay ahead for Missouri bridges. Statistics released during the year by the Federal Highway Administration (FHWA) showed that more than two-thirds of all Missouri bridges were deficient and in need of repair.

According to the FHWA 1984 Bridge Report of Missouri, 68.4 percent of all Missouri's bridges more than 20 feet in length were classified as structurally deficient or functionally obsolete. Of 23,825 bridges, 16,308 were deficient.

A structurally deficient bridge is one that has been restricted to light vehicles only, is closed to traffic or must be rehabilitated immediately to remain open. A bridge that is functionally obsolete can no longer safely handle its current traffic load because of its narrow lanes, load-carrying capacity or approach roadway alignment.

In a FHWA nationwide bridge report, only Texas had a larger number of deficient bridges than Missouri. However, Missouri ranked third in the percentage of deficient bridges behind North Carolina and Montana.

Almost one-half of the bridges throughout the 50 states, the District of Columbia and Puerto Rico were deficient. Of 571,246 bridges, 45.6 percent or 260,306 were considered deficient. This was an increase from 1983 when 253,196 bridges were rated deficient or 44.9 percent of the 564,499 bridges surveyed. However, in Missouri the number and the percentage of deficient bridges had decreased slightly. Of 23,525 bridges, 16,351 or 69.5 percent were rated deficient in 1983.

In 1984, 215 bridges in Missouri

were closed and another 4,547 had posted lower weight limits.

The average life of a bridge is 50 years, and many of the deficient bridges are well into their golden years. This age factor, along with today's heavier traffic volumes and inadequate funding for repairs, have taken their toll on Missouri's bridges.

COUNTIES WORKING HARD ON BRIDGE PROGRAM

Missouri counties continue to do a good job in getting bridge projects submitted for the replacement of deficient structures according to Robert N. Hunter, chief engineer of the Department.

Hunter says that 96 counties out of a total of 114 counties in the state have elected to participate in the Federal-Aid Highway Off-System Bridge Replacement and Rehabilitation Program.

In the past two years, there have been 282 county bridge projects submitted to the Department to secure approval and matching funds under this Off-System Bridge Replacement and Rehabilitation Program.

This federal program was initiated to assist counties in replacing and rehabilitating bridges under their control by providing them with financial assistance. A total of 80 percent of the funds can be received from the federal government with each county providing the remaining 20 percent for each structure.

Once a bridge replacement proposal is submitted, it takes approximately nine months and involves numerous steps before it is finally approved.

Hunter says the 10 District staffs are working closely with the counties to expedite these projects. The Department has developed standard bridge plans to make it easier

for counties to have economical design plans completed in the shortest possible time. The Department has also furnished each county with a guidance manual to help the counties cope with the various federal requirements they must meet in order to be eligible to receive federal funds.

It frequently takes up to 18 months before contracts are let. There have been 38 contracts let during the past two years. Design approval has been given on another 134 projects that will be ready for contract when their design has been completed.

Hunter is impressed by the number of applications the counties have submitted because many counties do not have an ongoing bridge replacement program. The Department hopes this participation will continue.

DEPARTMENT ANSWERS BRIDGE FUND QUESTIONS

During the summer and fall of 1984, an election year, articles critical of the Department's handling of the Federal Aid Highway Off-System Bridge Replacement and Rehabilitation Program appeared in newspapers throughout the state.

Those articles accused the Department of dragging its feet and engaging in blocking measures in giving federal bridge funds to local governments.

The Surface Transportation Assistance Act of 1982 set up a new apportionment formula for the Federal-Aid Bridge Program. The formula gave equal weighting to the replacement and rehabilitation needs of bridges on and off the Federal-Aid System. The new formula specified that not less than 15 percent or more than 35 percent of a state's bridge

apportionment could be used for bridges off the Federal-Aid system. It provides 80 percent federal funds for such work.

Following the act's passage, the Department began working with the various counties to insure they were made aware of this stepped-up program and to advise them of the various federal criteria they would have to meet to be eligible to receive federal funds.

The Department advised the counties that 15 percent of the state allotment of bridge replacement funds would be made available to them. The Department thought the counties would have a difficult time coming up with the 20 percent matching funds because of short notice. The Department also believed it would be difficult for the counties to meet the various federal criteria for the first year's allocation within the short time frame.

At a later date, and after meeting with the County Judges' Association, the Department advised the counties that it would release 15 percent of the bridge money or approximately \$10 million for fiscal year 1984. However, the Department said that at such time as the \$10 million along with the unobligated monies from fiscal 1983 were obligated, the Department would consider additional off-system bridge projects where plans, specifications and estimates could be presented for contract work for additional bridge replacement monies, not to exceed 25 percent of the total monies. The Districts again met with all the county courts to explain this new allocation.

The allegations that our Department made it difficult for the counties to get their share of this program's federal funds were false. The Department has been doing everything possible to insure that the counties could receive their fair share of bridge funds

and, at the same time, meet the various federal criteria that have been established.

There are 5,400 miles of the state highway system not included in the Federal-Aid System. The Department could use some of this off-system bridge money on this system; however, it has not elected to do so.

Another allegation included in these articles was that the Department should use state road funds to pay the counties' share of matching funds or the 20 percent.

During the 1983-84 legislative session, a bill was introduced to require the state to pay for the local governments' share on the bridge program. At the bill's public hearing, several legislators questioned whether or not the state could, by the present wording of the Missouri Constitution, use state highway funds on local roads. The Department's legal staff also questioned whether such action was legal.

Due to the outstanding needs on the state highway system, the Department also believes it would not be reasonable to use state funds on local projects.

ENTERPRISE PROGRAM AWARDED HELPING HAND

The Disadvantaged and Women Business Enterprise Program provides opportunities for businesses owned and controlled by socially and economically disadvantaged individuals to participate in state and federally assisted programs as contractors, consultants and suppliers. As part of its overall Affirmative Action Program, the Department is committed, under Title VI, to encourage, develop and implement this enterprise program.

Through its affirmative action efforts, the Department awarded

\$55,553,612 in state and federally assisted contracts and subcontracts to disadvantaged and women-owned firms during 1984.

The Department has reduced selected contract sizes to provide more entry opportunities for smaller, less-experienced disadvantaged and women-owned firms. The Department has also permitted joint ventures by disadvantaged and women-owned firms in order to provide more entry opportunities.

An updated list of Missouri and surrounding-area disadvantaged and women-owned businesses has been distributed. It is categorized by area of expertise, location and specific product or services and is sent to all contractors qualified to bid on work and to political subdivisions having initiated Federal Aid Urban (FAU) projects. The contractors and political subdivisions are encouraged to use the disadvantaged and women-owned firms when possible.

Bidders on construction projects in Missouri are required to certify whether they intend to subcontract a portion of the work. If so, the bidders are obligated to take affirmative action in attempting to use disadvantaged and women-owned firms on the intended subcontracted portions.

COUNTER MEASURE

It's two o'clock on a Saturday morning.

Telephone company equipment indicates a call, in fact several calls, are being made from Departmental phones in the Main Office Planning Division's traffic data collection and reduction section.

Surely the calls can't be official business! No one would be up at this hour, especially on a weekend.

Well, guess again. The calls **are** official business, and they aren't being made by a person, but by a machine—a machine that is part of a new \$292,000 system that will modernize the way the Department records traffic data.

The new traffic data recording equipment is all solid-state, according to Planning Traffic Engineer Phillip W. Jackson. It is programmed to retrieve information weekly from traffic recording devices around the state in the early morning hours.

"Since all the equipment is connected by telephone lines, it's cheaper for us to get the information when the rates are low," he says.

The Department has been recording traffic information since 1926. Although the methods have changed some over the years, the prime reasons for doing so haven't.

Jackson says data obtained from the traffic counting devices is used to show traffic trends, to determine average traffic counts for specific locations and to record the miles of travel logged on the 32,000-mile state highway system.

Allan H. Heckman, planning



Main Office Planning Data Reduction Supervisor Allan Heckman (left) and Traffic Counter Supervisor Bruce Nichols check the connection between one of the Department's new electronic traffic counters and a central computer in the Main Office Planning Division.

data reduction supervisor, says the new traffic recording equipment is much more versatile than the equipment used previously by the Department.

"The new system uses the existing magnetic loops already cut into the pavement," Heckman says.

These loops are about 2 inches under the highway surface. When they are magnetized, they create a magnetic field. As vehicles pass over the loops, the action is recorded by a counter and stored in the machine's memory. All it takes is a phone call to get the information, Heckman says.

There are 108 counters located in various parts of the state, and each will be connected by a telephone line to the central computer in the Main Office Planning Division. Installation of the new equipment began in 1984 and should be completed by the end of 1985.

According to Jackson, the computer is programmed to call each traffic recording station once a week and retrieve data. This weekly

information is stored in the central computer until the end of the month. At that time, the individual location figures are merged to provide a monthly total. Travel reports are issued monthly.

Prior to installation of the new system, data retrieval was more difficult. Employees had to visit each location and remove a paper tape that contained the traffic information. Not only was this time consuming, Heckman says but the Department had no way of knowing if the equipment was even working until it was manually checked.

"We checked each machine twice a month—once to see if it was still working and once to get the tape," he adds. "The new equipment can be checked from a desk through the same telephone line the information comes in through. If the machine is malfunctioning, we will know it instantly."

Another advantage is the new equipment's battery back-up system, which can power the counter for up to a month if the normal

power is cut off. When the power to the old units goes out, the whole counter is inoperative, Heckman explains.

Some of the new equipment will also be able to monitor traffic speeds. Heckman says 12 of the 108 locations will have speed classifiers in addition to the counters.

Speed is monitored by cutting another series of loops into the pavement, 16 feet apart. Traffic speed is measured by the distance it takes a vehicle to travel between the loops, he says. The speed is recorded in the classifier in one of 12 speed categories.

"Most motorists have no idea this type of information is being obtained. If you don't know the units are there, you would never spot them from the highway," he says. The loops are barely visible, and the counters are in protective boxes off the highway.

"Vandalism is rarely a problem," he says, "because people don't know what the equipment is."

Heckman notes that the speed monitoring devices are extremely accurate and are being used by the highway patrol in some states to catch speeders.

Missouri reports its speed information to the federal government, as do other states.

Heckman says a variety of information is available from a simple

phone call, something that was non-existent with the old equipment. One call now yields the volume of traffic in both directions, the time, the date, the battery status, the location of the counter and the storage space left on the device's memory chip.

Heckman says it will take about two hours for all 108 stations to transmit information to the main computer. The units can hold up to 157 days of traffic information before they start over, Heckman says. Counters with speed classifiers hold less data because extra space in the memory is needed for the speed information.

The traffic counters are set up around the state on a random sample method. Heckman says there are a certain number of counters per highway system and per group code.

"Group codes represent different highway situations. For instance, group one is a highway section where traffic stays pretty much the same every day, whereas group four represents an area like the Lake of the Ozarks that has seasonal traffic patterns," Heckman explains.

The new system also allows the Department to instantaneously determine traffic counts at any given counter area. In areas where permanent counters are not located, the Department often installs a temporary counter for at least a three-day period. Through a series of computations, statisticians can then arrive at an average daily traffic flow and yearly traffic flow.

This information is used in planning highway improvements, Jackson adds.

It takes about a half day to install the new equipment, Heckman says, and it will take about two years to totally phase out the old equipment.

Once the transformation is complete, the Department will have taken one more step into the computer age. But it won't be the last. You can count on it!

JOB TITLES GO GENERIC

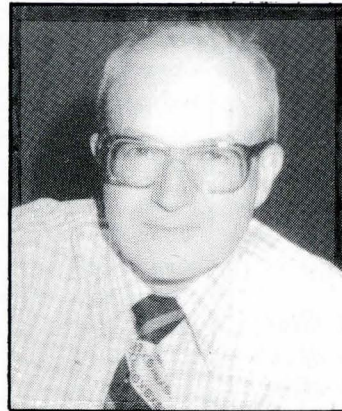
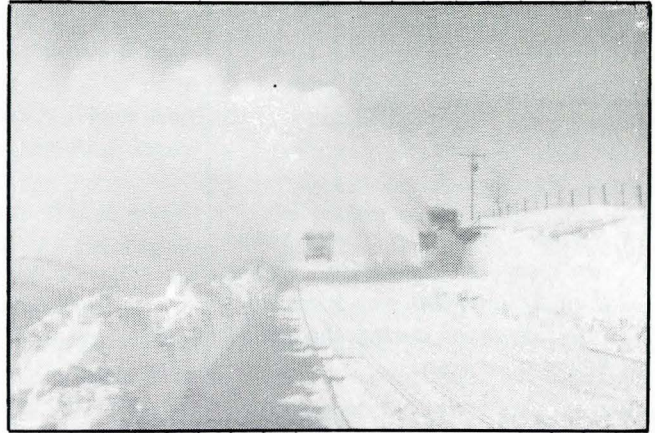
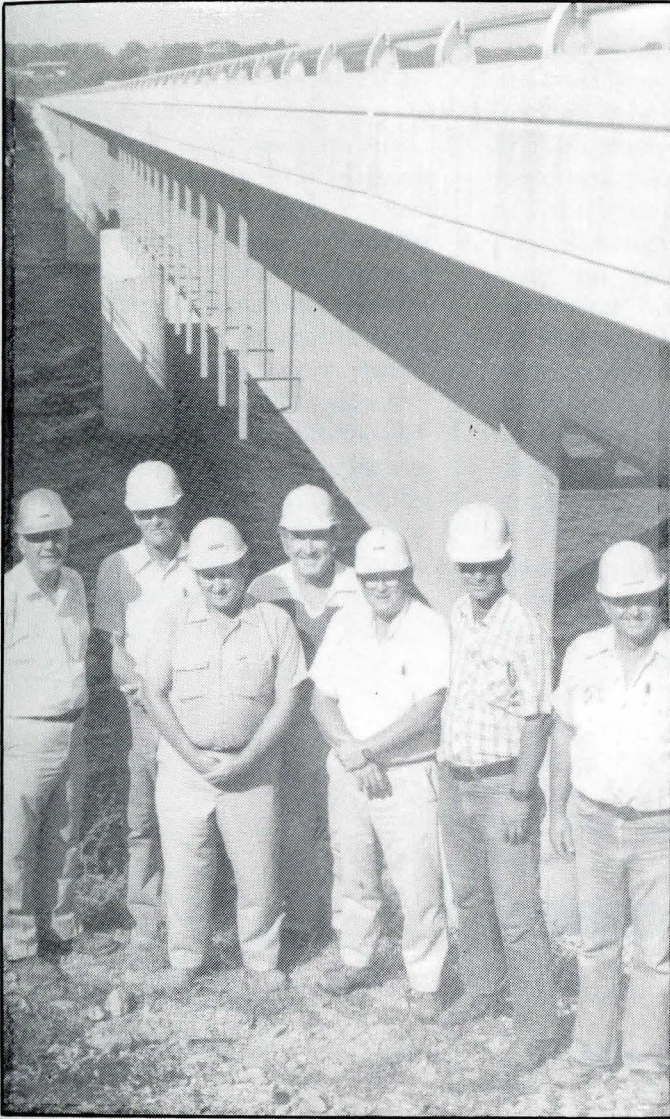
If the U.S. Marine Corps had to look through a Departmental job title list and pick a few good "men," it would be out of luck—because the Department has changed job titles, down to the last "man."

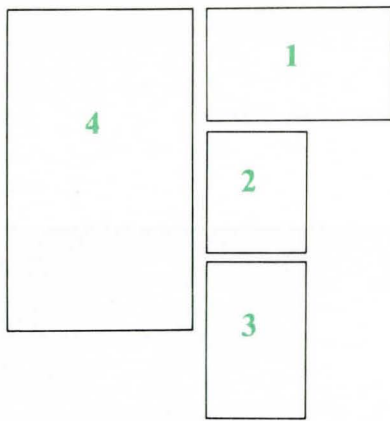
Gone is the maintenanceman, draftsman, survey chainman and district garage foreman. Gone is the structural draftsman, construction rodman and serviceman. Gone also is the sign layout man, building foreman and deliveryman.

Here to stay is the maintenance crew member, drafting technician, survey assistant and district equipment supervisor. Here also is the structural detailer, construction aide and service attendant. Welcome also the sign layout specialist, building specialist and delivery driver.

The job title changes were made in keeping with the national trend toward generic titles for all types of jobs. The changes, which became effective June 1, did not affect salaries or job assignments.

Divisions





- 1** *Neither rain, sleet nor snow can stop the Sno-Go! More than \$21,000,000 was spent on snow removal during the 1983-84 winter season.*
- 2** *James A. "Jack" Moberly, structural design engineer in the Bridge Division and MHTD January Employee of the Month*
- 3** *Public Information Staffer Bob Maher uses his artistic eye to create a wildflower display in the Highway Gardens at the State Fair in Sedalia.*
- 4** *Work on the Grand Glaize Bridge at the Lake of the Ozarks was a team effort. District 5 team members included from left Resident Engineer Don Branham, Paul Leap, Jake McPheeters, Jerry Spratt, Jack Blair, Gerald Long and Forrest Brown. Not pictured are Dennis Thompson, Cliff McKinley and Bob Woolley.*

ACCOUNTING

The accounting and expenditure control for the Department is the direct responsibility of the Accounting Division. All of the Department's records of financial transactions are processed and recorded by this division.

Based on anticipated revenues and disbursements, the division prepares legislative budget requests as well as annual internal budgets.

The division reviews all payment documents for accuracy, priority of payment, and to determine if funds are available prior to recording and certification for payment.

The division processed 198,041 checks during 1984. This represents disbursements of \$566,566,004.72. Disbursements through gas and aviation tax refunds and other state departments from highway

funds equaled \$95,094,774.59. Total disbursements from all funds for 1984 equaled \$669,247,731.47.

Workers' compensation benefits and medical care payments under workers' compensation are made by the Department's insurance carrier. However, these payments are routed through the division and recorded to insure absolute accuracy of fiscal records. There were 697 workers' compensation cases processed this year.

The division has the responsibility for administering the regulations and policies of the Highway Employees' and Highway Patrol Medical and Life Insurance Plan, which includes the Optional Life Insurance Plan. As of Dec. 31, 1984, there were 9,383 health insurance plans, 7,358 state furnished life insurance plans and 6,652 optional life insurance plans in force. For the period from Jan. 1, 1984, through Dec. 31, 1984, there were 23,847 health claim payments with \$9,042,893.18 paid in benefits. During the same period, there were 12 life claims under the optional life plan with \$60,310.40 and \$264,438.64 respectively in benefits paid to survivors.

BRIDGE

The Bridge Division is responsible for the design of bridge structures on the state highway system.

During the year 110 designs were completed for letting. Of this number, 77 were designed for major system routes with 33 to be built on supplementary routes.

The total length of all new structures contracted during the year amounted to 26,464 feet at a cost of \$51,087,486. Of these amounts, 4,676 feet were contracted on the supplementary system at a cost of \$6,888,353.

The Interstate Route 670 viaduct

in Kansas City was one of the major structures contracted during the year. The project included a contract for the roadway decks and painting of three bridges at a cost of \$5,814,554. The project length is 4,109 feet.

In addition to the design of new structures, 268 designs were prepared for repairing, widening or extending 67,837 feet of existing bridges at a cost of \$31,548,723.

Twenty-one designs were prepared for county bridge replacement under the Federal Highway Administration Off-System Program.

In addition to structure design, this division has been assisting in the inspection and rating of off-system or county and/or municipally owned bridges as part of the Federal Highway Administration Bridge Replacement and Rehabilitation Program.

CONSTRUCTION

Construction work continues on Interstate 170 in the St. Louis area, Interstate 229 near St. Joseph and Interstate Routes 435 and 670 in the Kansas City area. In addition to this work, construction was active on two new bridges over the Missouri River. Repair work on the Route 41 bridge over the Missouri River at Miami was completed this year. The Grand

Glaize Bridge, a major structure on Route 54 serving the Lake of the Ozarks area, was also completed during the year.

Interstate system contracts involved new construction, upgrading existing dual facilities to Interstate standards, rest area modifications and implementing the latest safety features for highway traffic. The division resurfaced 109 miles of existing Interstate pavement with asphaltic concrete. Approximately 22 miles of Interstate road are now under construction.

Primary and supplementary system contracts included new construction, bridge replacements, widening and resurfacing projects. Where applicable, the latest safety features were included. The contracts included costs of construction work in rural and urban areas and projects financed either with federal-aid or with 100 percent state funds.

Costs of inspecting construction projects were kept at a low level by upgrading equipment along with additional personnel training.

ACTIVE PROJECTS AS OF DEC. 31, 1984

System	Awarded in 1981	Awarded in 1982	Awarded in 1983	Awarded in 1984	Total
FEDERAL-AID FUNDS					
Interstate	0	0	24	69	93
Primary	0	1	22	72	95
Supplemental	0	0	13	26	39
Off-System	0	0	1	15	16
Sub-Total (FA)	0	1	60	182	243
100 PERCENT STATE FUNDS					
Interstate	0	0	0	0	0
Primary	0	0	3	24	27
Supplemental	0	0	2	16	18
Sub-Total (St.)	0	0	5	40	45
TOTALS	0	1	65	222	288

EQUIPMENT AND PROCUREMENT

The Equipment and Procurement Division is responsible for procuring and maintaining a fleet of equipment that will efficiently and effectively permit the Department to carry out its functions. At the end of the year, the division was maintaining 5,834 rental units consisting of passenger cars, trucks, carryalls, tractors, mowers, motor-graders and various miscellaneous units. This is an increase of 38 units from 1983.

The division has still not fully completed the changeover to multi-viscosity motor oil and hydraulic fluids but expects to sometime in 1985. Depleting the old stocks has delayed this process beyond the target date of Dec. 31, 1984.

The amount of fuel used in the fleet in 1984 decreased approximately 2.1 percent from 1983. The total cost for fuel decreased due to less use and the lower unit cost of fuel.

A new fuel monitoring program began operation in 1984. This program, when fully perfected, will allow detection of fuel consumption problems by location as well as on individual equipment units.

Department operations required 6,927,822 gallons of gasoline;

1984 HIGHWAY SYSTEM MAINTENANCE MATERIALS USED

Various Types of Asphalt	44,376,200	gallons
Gravel	659,967	cubic yards
Stone and Chat	909,605	tons
Paint	598,784	gallons
Reflectorizing Spheres	3,253,500	pounds
Sodium Chloride (Winter 1983-84)	109,489	tons
Calcium Chloride (Winter 1983-84)	4,479	tons
Agricultural Seed	49,800	pounds
Treated Wood Sign Posts	18,924	each
Steel Sign Posts	21,300	each
Grader Blades	372,650	pounds

156,476 gallons of kerosene; and 1,671,274 gallons of diesel fuel to operate the fleet. In addition, 17,749 gallons of anti-freeze; 96,379 gallons of lubricating oil; 55,781 gallons of hydraulic oil; and 99,667 pounds of multi-purpose gear oil and lithium grease were used. During the year the division contracted for tires and tubes costing \$683,997.10; tire chains costing \$29,264.04; and shop equipment, parts and supplies totaling \$5,581,448.80.

The division is also charged with the responsibility of providing all tools, supplies and materials that are required in Department operations.

The Headquarters Sign Shop produced a total of 74,780 signs and markers of various shapes and sizes amounting to \$737,146.23 during the year.

Prior to late 1983, reflective sheeting cutout letters for use on many highway signs were commercially purchased. In late 1983 a die-cutting machine was purchased, and letters, arrows and corners are now produced from scrap reflective sheeting material. This has not only saved on the cost of material, but has made the cutouts readily available when needed rather than delaying sign production while awaiting delivery of these items from vendors. The machine and dies that cost \$2,500

paid for themselves in 1984 and saved an additional \$7,500 over the outright purchase of pre-cut letters.

As a cost-cutting measure, other types of supplies and equipment are produced at the Headquarters Garage as time and labor are available.

LEGAL

During 1984 the chief counsel's office instituted 21 separate actions in the various circuit courts of the state condemning right-of-way for state highway projects. These actions involve the acquisition of 63 separate tracts of land. One hundred eighty-four condemnation cases were disposed of by the entry of final judgments during the year.

The appellate courts of Missouri rendered decisions in 78 separate cases to which the Commission was a party. In the condemnation cases that were finally disposed of during the year, refunds of \$1,483,058.06 were obtained, representing various cases in which the final disposition was less than the amount that had originally been awarded by the condemnation commissioners and deposited in court.

The chief counsel's office handled the final disposition of 1,947 claims for damage to Commission-owned property resulting in a total recovery for such damage of \$674,681.09. In addition to claims for damage to Commission property where voluntary reimbursement for such damage was obtained, 44 actions were filed in court for the collection of damage to Commis-

sion-owned property, and 26 such cases were brought to final conclusion.

During 1984, 68 various types of suits were filed against the Commission, 28 of which were for alleged torts claiming defects in facilities.

In addition to other cases disposed of as set out above, 218 other cases of various types in which the Commission was a party were disposed of during the year.

In addition to other collections, miscellaneous collections were made by the chief counsel's office totaling \$57,768.58.

At the end of the year, the Commission had 406 condemnation cases pending in the various circuit courts of the state, and 187 cases of other types, many of which are tort proceedings.

MAINTENANCE AND TRAFFIC

In 1984 the Maintenance and Traffic Division was responsible for the maintenance of 33,914 center-line miles. This mileage includes recreational access roads, outer roadways, ramps, service roads and maintenance agreement sections.

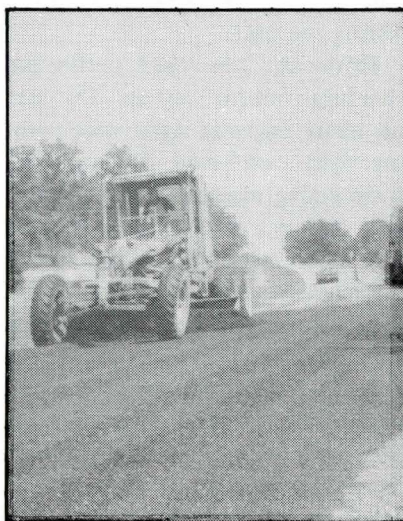
One of the major expenditures

of the division is low-type bituminous surface routes. In an effort to reduce maintenance expenditures for the past several years, the division has been reducing the maintenance surface treatment program. However, for the last four years, 2,474 miles of maintenance leveling course have been budgeted. In addition, 523 miles of contract leveling course were completed during the year.

One of the major objectives for cost and energy control continues to be reducing the use of cutback asphalt. In 1984 the division used 11,370,900 gallons of cutback asphalt and 33,005,300 gallons of emulsified asphalt, 74 percent of the total used.

The division used approximately 44,376,200 gallons of asphalt and 1,192,000 cubic yards of aggregate on the bituminous surface and patching operations.

The Department, in a continuing effort to conserve energy, has been building pool parking areas in and adjacent to the metropolitan areas. This program was started in 1975 with the original construction of 717 spaces. Since 1975, 3,466 parking spaces have been added by constructing new areas and expanding existing parking areas. At the end of December 1984, there were 4,183 spaces available for pool parking. The average daily usage in the last quarter of 1984 was 2,371 compared to 2,420 in the last quarter of 1983. In 1975 the average usage of avail-



able spaces was 42 percent. This had increased to 57 percent in the last quarter of 1984.

The division mowed approximately 356,526 acres of right-of-way. The total mowing cost was \$9,885,767 at an average cost of \$27.73 per acre. In addition to this expenditure, \$1,606,055 was spent on litter pickup.

Division personnel made routine inspections on all state-maintained bridges to determine their condition and repair needs. In 1984, 6,583 bridges on the state highway system were inspected. Thirty-seven of these are Missouri or Mississippi River crossings, 19 of which are jointly maintained by adjacent states.

Repair crews completed structural repairs on 133 bridges. In addition, 13 other structures were repaired because of collision damage.

Bridge crews completed painting 139 bridges during the year. Of this number, 80 bridges received a complete painting. The remaining 59 bridges were partially painted.

The Department maintains 20 rest areas on the Interstate system. Four include tourist information centers. In addition, there is also a tourist information center located in Hannibal on Route 61 that is not connected with an Interstate rest area.

Efforts continue to control Johnsongrass, especially in counties that have adopted the Johnson-

grass Law. In 1984 approximately 7,300 acres were sprayed by contract, and approximately 4,000 acres were sprayed by maintenance forces in an effort to control Johnsongrass. In addition to the Johnsongrass control program, approximately 15,300 acres were chemically treated to control thistle and other weeds and brush.

The division purchased approximately 470,000 pounds of seed for overseeding and spot seeding disturbed areas of right-of-way at a cost of approximately \$42,300. Included were 8,300 pounds of crown vetch, which is used for planting unmowable slopes.

There were 82,528 overdimension, overweight and overdimension/overweight special permits issued during 1984. Of this total, 21,473 or 26 percent were issued by the District Offices. Included in the total were 1,226 permits issued to governmental agencies or subdivisions with fees.

The winter of 1983-84 was more severe than the winter of 1982-83. As a result, chemical use increased. The division purchased 109,489 tons of sodium chloride and 4,479 tons of calcium chloride. A total of \$21,762,799 was spent on snow removal in the 1983-84 winter season, an increase of 81 percent from the 1982-83 winter season.

In 1984 two intersections were signalized by permit, and one was signalized by maintenance forces. Modernization of existing traffic signals continued throughout the state. Maintenance forces upgraded or installed new traffic control equipment at 37 existing signalized intersections. The program to interconnect various traffic signals for traffic progression was continued. New product equipment to control traffic signals more economically was placed in service for evaluation.

Contracts were let to replumb all guyed radio towers, which included retensioning of the guy cables, in the Department's state-wide radio system.

Systematic monitoring of peak-period freeway traffic operations in the St. Louis and Kansas City metropolitan areas continued in 1984. This surveillance program provided information on the location and severity of traffic congestion on approximately 170 miles of this system.

Specific problem locations received additional surveillance and analysis. The Department was assisted in a study at Interstate 435 and Bannister Road in Kansas City. A study was initiated in St. Charles on Interstate 70. The traffic flow on much of the freeway system has been greatly affected by construction during the year.

During 1984, 62,585 accidents that occurred on the state highway system were coded and

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placed in the accident data records system. These reports were provided by the State Highway Patrol and approximately 565 city and county enforcement agencies.

Speed studies were conducted at 155 locations, and traffic volume counts were made at 161 locations.

The division continued the 120/Medium Improvement Program in 1984. Thirty-five locations where a higher than normal number of accidents had been occurring were investigated. At 25 of these locations, corrective measures have been implemented.

The division investigated 100 locations that had 20 or more accidents in the three-year period, and countermeasures were evaluated for possible funding under Section 209 of the 1973 Federal Highway Act. Thirty-four of these locations have been tentatively programmed for improvements at a total estimated cost of \$5,068,000 on the Right-of-Way and Construction Program.

There were 550 billboards removed by property owners and 42 removed by state forces under the outdoor advertising laws and regulations.

Activities funded from 402 Program funds under the 3+ Stan-

dards of the Missouri Highway Safety Program and coordinated by the Missouri Highway and Transportation Department are as follows:

*The Traffic Engineering Assistance Program—This is a program to aid the political subdivisions with traffic engineering problems where comprehensive review is required and where the subdivision does not have the personnel available to carry out the review. These services are performed by two consultants retained by the Commission for this purpose. Nineteen studies were conducted in 18 political subdivisions in 1984. The average cost of these studies was \$2,429 per study.

*The Bridge Engineering Assistance Program—This is a program established to aid political subdivisions in obtaining information on the structural adequacy of bridges under their jurisdiction. These services are performed by two consultants retained by the Commission on a yearly contract. The service includes determining structural adequacy, establishing posted weight limits and developing priorities for the repair or replacement of bridges. Structural adequacy reports and inventories were conducted on 82 bridges during the year at an average cost of \$903 per bridge.

*The 35th Annual Traffic Conference was held May 1-2, 1984, at the University of Missouri-Columbia campus for the engineering training portion of our annual program. One hundred and ten participants from various counties, cities, states and federal governments attended this two-day conference that dealt with solutions to traffic problems.

*A Traffic Workshop for Small Cities was conducted at the University of Missouri-Rolla campus, Sept. 27-28, 1984. This workshop included various aspects of traffic engineering in relation to small cities' problems.

It was designed for personnel who have responsibilities for traffic safety in Missouri communities. Thirty-five participants attended this workshop.

*A series of microcomputer workshops were conducted at Independence, Jefferson City, Kirkwood and Springfield between Aug. 28 and Sept. 27, 1984. The workshops were developed to acquaint traffic engineers with microcomputers. In addition to hands-on experience, some instruction was given regarding available programs and applications. Eighty-three participants attended the various workshops.

The Sign Reclamation Plant, which began operation in September 1977, provided 46,419 metal and 289 wood signs. This comprised 62 percent of the sign blanks used during the year. In addition to providing sign blanks, other component parts of sign hardware such as Z-bars, button copy, button reflectors, locking tabs and backing strips were also salvaged by the Reclamation Plant. The total savings to the Department by the plant during 1984 amounted to approximately \$206,500.

During the year the Department placed a total of 59,000 miles of center-line, lane-line and edge-line stripes. This total included 36,600 miles of center-line and lane-line stripes and 22,400 miles of edge-line stripes. In conjunction with this striping, approximately 10,000 miles of no-passing zone stripes were also placed.

MATERIALS AND RESEARCH

The quality of materials intended for use in the construction and maintenance of the state highway system is the primary responsibility of the Materials and Research Division. This responsibility is carried out by overseeing and coordinating field inspection by personnel assigned to the ten districts including the sampling, testing and approval of various materials prior to use. Research to improve materials performance, refine procedures or reduce costs is another important function of the division. Designs for all bituminous and portland cement concrete mixtures as well as all needed subsurface exploration are also performed by the division.

The central laboratory for the testing of materials is maintained in Jefferson City. This laboratory is an approved facility that is inspected regularly by national inspection agencies, such as the Cement and Concrete Reference Laboratory and the American Association of State Highway and Transportation Officials Materials Reference Laboratory. Very good scores are consistently received. Many of the materials that are routinely tested in the field are also tested in the laboratory.

This is done in order to insure uniformity of testing procedures on a statewide basis. The laboratory also tests all materials requiring specialized procedures.

In 1984 a total of 30,443 samples were handled in the laboratory including those of an experimental or investigative nature.

During 1984 the division was actively engaged in 15 major research projects. In most cases, both laboratory and field investigations were required. Items of investigation ranged from materials and methods used to combat soil erosion to ways of extending the life of bridge decks. Among the smaller investigations performed were the testing of approximately 111 new products proposed for use as well as a large number of various smaller investigations

such as pavement condition and waste product surveys.

With the increased emphasis on bridge rehabilitation, the division has been given responsibility for a large number of bridge deck condition surveys. These surveys are required to determine the amount of rehabilitation necessary such as patching, waterproofing and, in some cases, the addition of new wearing surfaces. In 1984, 162 bridge deck condition surveys were performed. Each survey consisting, at a minimum, of electrical testing to determine if the reinforcing steel is actively rusting; of sampling the concrete at various depths to determine the amount of salt contamination; and of comprehensive map-

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1984 COMMONLY USED MATERIALS INSPECTED, TESTED AND APPROVED

Aggregates	6,967,052	tons
Cement	469,559	tons
Reinforcing Steel	27,074	tons
Culvert Pipe		
Corrugated Metal	93,951	linear feet
Reinforced Concrete	138,383	linear feet
Vitrified Clay	1,059	linear feet
Joints - Bituminous, Fiber	149,171	linear feet
Joints - Rubber	30,089	square feet
Joints - Metal	133,580	linear feet
Guard Rail	200,055	linear feet
Posts, Metal	71,529	posts
Precast Units		
Median Barriers	11,809	units
Concrete Bridge Beams	2,304	units
Concrete Inlets	972	units
Concrete Manholes	205	units
Lumber and Square Posts	414,482	board feet
Piling and Round Posts	7,430	linear feet
Bituminous Material		
Cutback	12,031,142	gallons
Penetration	4,856,446	gallons
Emulsified	32,939,060	gallons
Asphalt Cement	29,715,840	gallons
Paint	645,044	gallons

ping of both the top and bottom of the bridge deck to indicate the location of all cracks, patches, unsound areas and staining.

The division has the primary responsibility for obtaining and interpreting the subsurface information required to effectively design highways and bridges. The basic data is obtained by drilling equipment and crews based in the division headquarters in Jefferson City. Crews and equipment are dispatched as needed to all parts of the state. Division personnel are available to conduct special investigations, analyze materials and make recommendations on the various geotechnical matters such as foundation stability and settlement, slide corrections, soil and material surveys and retaining structures.

PERSONNEL

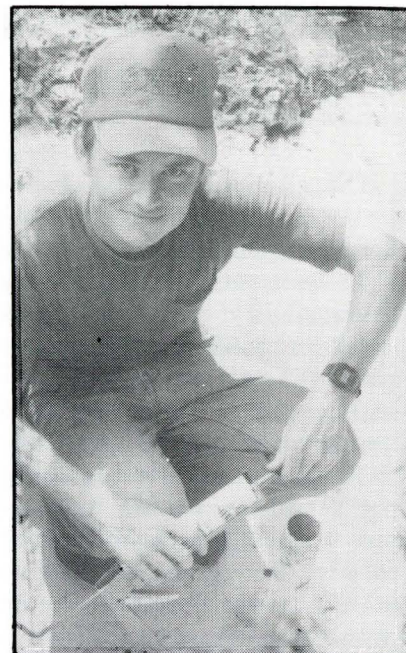
The Personnel Division provides staff assistance to the Department regarding personnel management matters such as general employment, college recruiting, employee training and development, wage and salary administration, personnel policy administration, affirmative action administration, employee relations and maintenance of personnel management records and statistics.

The division assists in developing and implementing administrative programs to ensure that competent applicants are attracted to jobs with the Department, that employees are properly trained in their occupation and that working conditions are conducive to both high productivity and fairness toward employees.

The Department is an equal opportunity employer and considers affirmative action a high priority. The Personnel Division, along with the districts, has concentrated efforts to attract qualified minority and female applicants. The division monitors Equal Employment Opportunity (EEO) progress and keeps the Headquarters Office and districts informed. During 1984 representatives of the division conducted supervisory training sessions in the districts to promote a better understanding of affirmative action concepts.

The orientation and training of new employees is primarily conducted through the Department's supervisors. New employees are provided with several publications to familiarize them with the Department's functions, working rules and regulations and employee benefits.

Employees, in obtaining the fundamental knowledge of their job, may become eligible for attendance at training conferences and seminars related to their specific work assignments. Most



Robert Ramey, maintenance crew member at the Highway Gardens on the State Fairgrounds, Sedalia

technical skills training is provided by operational divisions, using staff with the necessary expertise. The division supplements this employee training by periodically conducting supervisory training programs tailored specif-

ically to the policies and needs of the Department.

The Department continues to develop its human resources, minimize costly employee turnover and maintain a work environment conducive to high employee morale and motivation. All personnel transactions are reviewed by the division to attain equitable and uniform salary administration and policy application. Job evaluations are conducted to maintain accurate job specifications and internal salary equity.

To maintain an adequate salary structure and employee-benefits program within budgetary limitations, periodic compensation surveys are conducted. During the year a review of records for prior state service that may be creditable toward retirement continued.

The division maintains daily liaison with headquarters and

district administrative personnel to assist in clarifying personnel administration matters.

The division resolved 98 claims for unemployment compensation during 1984 and obtained 80 denials of compensation, thereby avoiding unwarranted claims expense to the Department.

Centralized personnel records are kept with considerable personnel data being used for statistical analysis of employee profiles, employee trends, manpower planning, etc. Personnel records have been improved through computer applications, which permit a more rapid recovery of personnel data required for government and operating reports.

The Department had 5,989 salaried employees on Dec. 31, 1984, in addition to 407 summer employees during the summer of 1984. Temporary and emergency employees are also employed as needed for short durations, such as for snow removal.

During 1984, 118 employees were processed for retirement. Nine were between ages 55-60 with 15 or more years of service; 78 were between ages 60-65 with 15 or more years of service; 11 were between ages 65-70 with four or more years of service; and 20 had become incapacitated and qualified for disability benefits. Nine vested members also elected to begin annuity benefits. The Highway Employees' and Highway Patrol Retirement System is currently paying benefits to 2,115 Department retirees, survivors and vested members.

The Department recognizes that skilled work results, high productivity and sound decision-making are products of retaining a trained, experienced work force. As of Dec. 31, 1984, the average employee had given 14 years and 3 months of service to the Department.

PLANNING

The Planning Division is an integral part of the Department. It is the responsibility of this division to collect, analyze and process the financial, historical, traffic and related data that is used in the planning process to develop highway needs, a highway improvement program and financial statistics.

The comprehensive planning process continued in urbanized areas. This is a cooperative effort between the Department and local planning organizations in the six urbanized areas with a population of 50,000 or more. The planning process enables cities to develop and implement long-range plans and capital improvement programs. All cities of 5,000 or more population were assisted in maintaining up-to-date records of the functionally classified street and federal-aid systems. In addition, several requests from the small urban areas for planning assistance were handled.

The 1984 Highway Cost Allocation Study was completed. The study includes estimates of responsi-

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bility for state highway system costs for vehicles licensed in various weight groups.

A report of 1984 travel and accident data for roads and streets in Missouri was published.

The information used to update the National Highway Performance Monitoring System for the state was also collected and reported. The physical and geometric data was assembled for publication in the Interstate, primary, secondary and bridge service ratings. Studies were made to determine highway and bridge deficiencies and the proper distribution of federal and state funds to all districts for programming highway projects.

The 1985 Highway Right-of-Way and Construction Program was completed, and work continued on development of the 1986 Highway Right-of-Way and Construction Program.

Vehicle traffic volume counts

and truck size and weight data were gathered on the state highway system for 1984. This information was used in identifying needs, designing improvements and programming projects for the state highway system. Approximately 4,000 vehicle counts and 145 vehicle-classification studies were made throughout the state. Highway speed information for vehicular traffic was obtained through the periodic monitoring of 34 locations on the state system. The travel data compiled on the state system showed an increase in vehicular travel of approximately 4.9 percent from 1983. Also, origin-destination studies were conducted at four route locations within the state to determine travel characteristics.

This past year 21 county highway maps were revised or redrawn. There was also an update of 19 urban-vicinity maps and 163 city maps.

PUBLIC INFORMATION

The Public Information Division is responsible for keeping employees and the general public informed about the many activities of the Department.

The Highway and Transportation NEWS, the Department's employee publication, was published and distributed monthly to more than 9,000 people.

The division answered about 200 mail and telephone requests per month regarding maps, road information, routings and educational material.

Personnel supervised the distribution of one million highway maps, many of which were distributed at the Missouri State Fair. Personnel staffed the annual fair exhibit in the Highway Gardens, a roadside park on the fairgrounds. More than 300,000 people came through the park during the fair's 10-day run.

During the year the division prepared and distributed about 150 news releases to news media. The districts were given the task of writing news releases on their local projects. The division presented a news release

STATUS OF MISSOURI HIGHWAY SYSTEM

(As of Dec. 31, 1984)

SYSTEM	ROAD MILES
Interstate	1,141.764
Primary	6,837.688
Supplementary	24,272.691
TOTAL	32,252.143
 TYPE	
Granular	4.274
Low-Type Bituminous	24,905.031
High-Type Bituminous	4,597.604
Concrete	2,745.234
TOTAL	32,252.143

writing short course to help district personnel effectively reach the media.

A public relations/communications seminar was also presented to district and division employees to assist them in their public relations efforts by increasing their communication skills.

Division personnel assisted in several dedication and opening ceremonies for various projects during the summer and early fall months.

Keeping track of legislation of Department interest kept staffers busy during the months when the General Assembly was in session.

The division coordinated the Department's service awards banquet, which recognizes

employees with 25 to 45 years of service.

The statewide newspaper clipping service continued, keeping officials informed of Department coverage and comment. The Department's technical library continued to be housed in the division.

A variety of speeches and brochures were also developed along with the Department's biennial and annual reports.

The division also coordinated the Employee of the Month program. One Department employee was chosen each month based on his or her job performance, general attitude, community involvement and distinguished service to the Department and to the motoring public.

RIGHT-OF-WAY

During 1984 the cost of right-of-way acquired for highway construction totaled \$11,779,601.

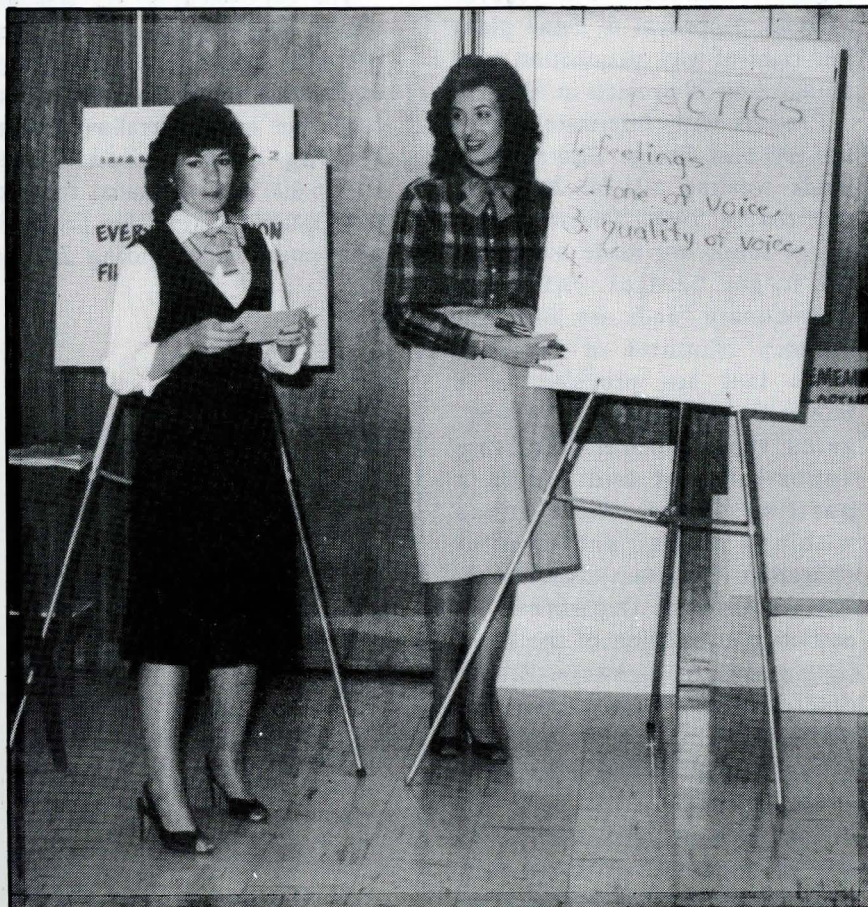
The division acquired 520 parcels--465 by negotiated settlement and 55 by condemnation, or 89 percent by negotiation and 11 percent by condemnation.

Payments totaling \$427,247.66 were made in 1984 under the Relocation Assistance and Payment Program to assist displaced families, businesses and farm operations in relocating. During the year 148 relocation claims were processed and paid.

The division obtained appraisals for 808 parcels during 1984. Two separate appraisals were prepared for 7 percent of the parcels involved, making a total of 865 appraisals produced. An average of 67 parcels was appraised each month, which required an average production of 71 separate appraisals per month.

Receipts from the sale of improvements located on right-of-way acquired for highway construction and from the sale of excess property totaled \$128,066.03.

Rental of airspace, excess property, and property acquired for future construction resulted in an income of \$174,041.40, and \$31,187 was derived from miscellaneous sources.



Public Information Staffers Kim Lawson (left) and Sue Muck teach employees how to increase their communication skills during one of the public relations seminars presented throughout the state.

SURVEYS AND PLANS

The Surveys and Plans Division is responsible for preparation of roadway improvement studies, plan preparation and the letting of contracts.

Meetings and formal hearings are held as needed or required to explain the need and purpose of highway improvements and to obtain public input. Coordination is also required with local, state and federal agencies. During the past year, tentative location approval was obtained on 76 highway improvements with 20

formal location and design public hearings and several public meetings held. Photogrammetric surveys utilizing aerial photography are initiated during early project development. Field surveys supplement this work and provide the basic information for plan development.

Assessment of environmental impacts for each project are considered. This includes air quality evaluation, noise studies and cultural, social and economic considerations. Cultural resource survey reports were completed on 112 projects.

Prior to letting highway improvements, right-of-way is acquired, arrangements are made for necessary utility adjustments and necessary permits and licenses are obtained from state and federal agencies. Approval of detail plans for right-of-way acquisition was obtained on 99 projects in 1984.

Projects with Interstate discretionary and bridge discretionary funds totaling \$25,246,209 were realized in 1984. Discretionary bridge funds are made available for larger bridges. Interstate discretionary funds are an extraordinary allotment of Interstate funds that are provided as a bonus to states who have obligated their normal Interstate apportionment and are in a position to use these funds within a 90-day period after obligation. Interstate discretionary funds permit the Department to accelerate completion of the Interstate system of highways. Bridge discretionary funds facilitate replacement of major structures without using normal federal-aid apportionments.

The division also administers several federal-aid programs that provide funding for cities, counties and rail-highway crossing safety improvements.

The Federal-Aid Urban (FAU) Program provides federal funding for street and highway construc-

tion in cities and urban areas with more than 5,000 population. During 1984 approximately \$19,159,000 was obligated to cities throughout the state for this program. The FAU funds are generally used to finance 75 percent of the cost of eligible projects with local jurisdictions providing the 25 percent matching funds. During the year 26 projects were approved for construction under this program.

The FAU Bridge Replacement Program financed three large bridge replacement projects in urban areas in 1984 at a cost of approximately \$3,261,000. Bridge replacement funds are used to finance 80 percent of the cost with local agencies responsible for the remaining 20 percent.

The Off-System Bridge Rehabilitation and Replacement Program provides federal funds for bridge repair and replacement on county roads not on a federal-aid system. During 1984 approximately \$9,776,000 was obligated for projects qualifying for this program with counties providing 20 per-

cent matching funds. During 1984, 143 projects were approved for preliminary engineering charges, 44 were approved for construction and 37 projects were placed under contract by the counties.

Safety improvements at railroad-highway crossings are available through the Rail-Highway Safety Program. During 1984, 33 crossings were improved by the installation or replacement of standard or cantilevered signals and/or gates. Nineteen of these

crossings were on the state highway system, and the remaining 14 were on city streets or county road crossings. The cost of the work was \$2,475,000, of which 37 percent was spent on the 14 off-system crossings.

The ongoing program to improve the riding quality of railroad-highway crossings continued in 1984. Four high-type and 13 low-type crossings were completed. A total of \$127,000 was spent on this program.

During the past year, 11 highway lettings were held. Projects totaling \$385,222,477.43 were placed under contract. An average of 4.1 bids was received per project.

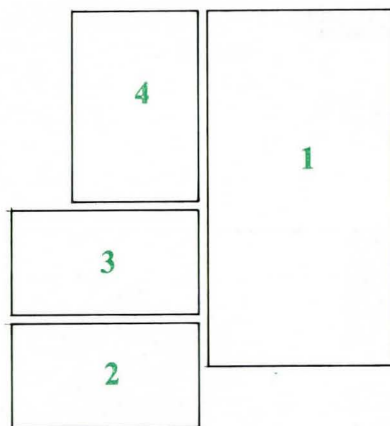
Prices increased during 1984 with the Missouri average composite cost index being 175.0 compared to base year 1977. The 1984 cost index reflects a 16.7 percent increase when compared with the 1983 cost index of 149.9.

PROJECTS AWARDED FOR 1984

1984 Report	Awards	Miles	Projects
Interstate System	\$ 123,413,948.95	214.855	96
Primary System	164,390,594.68	298.791	115
Supplementary System	78,382,266.57	202.595	114
Maintenance Work	10,476,423.02	631.940	93
Off-System (County Bridges)	4,735,421.82	3.704	23
Federal-Aid Urban (on State System)	<u>3,823,822.39</u>	<u>3.411</u>	<u>9</u>
TOTALS	\$ 385,222,477.43	1,355.296	450

Transportation





- 1 One Amtrak project completed during the year was extending service from St. Louis to Centralia, Ill. This new service is known as the "River Cities."
- 2 In Missouri 13 airports provide scheduled air transportation and enplaned about 10.5 million passengers in 1984.
- 3 Eleven port authorities operate along the Missouri and Mississippi Rivers within the state.
- 4 Transit systems statewide provided more than 1,780,000 passenger trips during the year.

AVIATION

The purpose of the aviation unit is to promote aviation as a mode of travel and to encourage safety and the development of airports and other aviation facilities within the state. Aviation personnel may provide technical advice to any airport sponsor, or others interested in the planning, acquisition, construction or expansion of an airport.

Aviation provides financial assistance to cities, towns or counties throughout the state through two grant programs. The Capital Improvement Grant Program provides financial assistance to sponsors of publicly owned airports for planning, construction or expansion. Funds under this program are granted on a 50 percent state/50 percent local matching basis.

Under the airport maintenance program, funds may be granted to airport sponsors on a 75 percent state/25 percent local basis for maintenance on runways, taxiways, parking aprons and for emergency repairs. The financing of this program is derived from the unrefunded portion of the motor fuel tax that is applied to aviation gasoline. A portion

of the unrefunded fuel tax is used for the annual publishing and distribution of the Missouri Aeronautical Chart and Airport Directory.

As a result of the Airline Deregulation Act of 1978, the aviation unit is active in monitoring the Small Community Essential Air Service Program that is regulated by the Civil Aeronautics Board. A requirement of the Act is that all actions affecting the air service to smaller communities must be coordinated with state aviation agencies.

Under a contractual agreement with the Federal Aviation Administration (FAA), Aviation inspects general aviation airports both publicly and privately owned, throughout the state.

Missouri has a total of 419 airport facilities. These include 354 airports, 58 heliports, one stolport and six seaplane bases. One hundred fifty-eight are publicly owned and 261 are privately owned. There are 3,858 active general aviation aircraft and 13,095 active pilots in the state. Thirteen airports provide scheduled air transportation and enplaned approximately 10.5 million passengers in 1984.

Aviation provided 10 capital improvement grants for a total of \$180,928 and 12 maintenance grants totaling \$173,404. The \$180,928 in Capital Improvement Grants generated an additional \$2,084,388 in combined local and federal money. Aviation published 7,600 copies of the Missouri Aeronautical Chart and Airport Directory at a cost of \$12,982.

There were 209 airports inspected, 143 of them under the FAA Airport Master Record (5010) Program, and 90 obstruction evaluations were performed during 1984.

During the year 39 applications for financial assistance under the airport capital improvement and

maintenance programs were received and processed.

Work progressed on the St. Louis Metropolitan Area General Aviation System Study. The study is a joint effort of the states of Missouri and Illinois, the East-West Gateway Coordinating Council and the FAA. Two public meetings were held in 1984 to discuss the goals and objectives of the study. As of Dec. 31, 1984, the study was approximately 85 percent complete.

Third State Economic Development projects were in progress at seven Missouri airports during 1984. Funds authorized for these projects total \$2,084,821.

RAILROADS

Railroads were involved in three major activity areas during 1984: rail planning, project implementation and the Amtrak 403(b) program.

The purpose of rail planning is to maintain the railroad as a viable entity within the overall transportation system, able to compete with the various modes. The goal is a healthy, compet-

itive rail system able to provide the public services required of it. Rail planning's second purpose is to provide an overview of the condition of the state's rail system. The objective is the development of programs that will improve the physical condition of the track and return those lines to a level of financial soundness.

Additionally, a number of associated rail studies were addressed during the year. These included the following: the various proposals (Grand Trunk/Chicago North Western/Soo) regarding acquisition of the Milwaukee Road; short-line rail studies; rail passenger route extensions; high-speed rail; the proposed Santa Fe/Southern Pacific consolidation; various rail facilities improvements; various proposals concerning the acquisition of Conrail; the Rock Island situation between St. Louis and Kansas City; and branch line abandonments. The 1984 Update to the Missouri State Rail Plan was completed containing detailed analyses of 14 lines (totaling 414.25 miles). To date, a total of 58 rail lines (totaling 2,143.8 miles) have been analyzed as part of the state's rail planning process.

There were two active local rail service assistance projects during 1984. Total funding for these projects (funded by a combination of railroad monies and federal funds available through the Local Rail Service Assistance Program) totaled \$3,598,126. These two projects were the following:

1. Rockville, MO to Nevada, MO (15.0 miles)--This project called for 15 miles of rail renewal and other work to be performed. Preliminary work on this project began in 1982 and was completed in the fall of 1983. In 1984 all minor repairs and the final audit were com-

pleted. Total project cost was \$2,039,126.

2. Appleton City, MO to Rockville, MO (10.0 miles)--This project called for 10 miles of rail renewal and other work to be performed. This project commenced in September 1984 and was completed in November. Total project cost was \$1,559,000.

Under the Third State Bond Issue Program, a rail spur construction project was approved for West Plains. It began in October

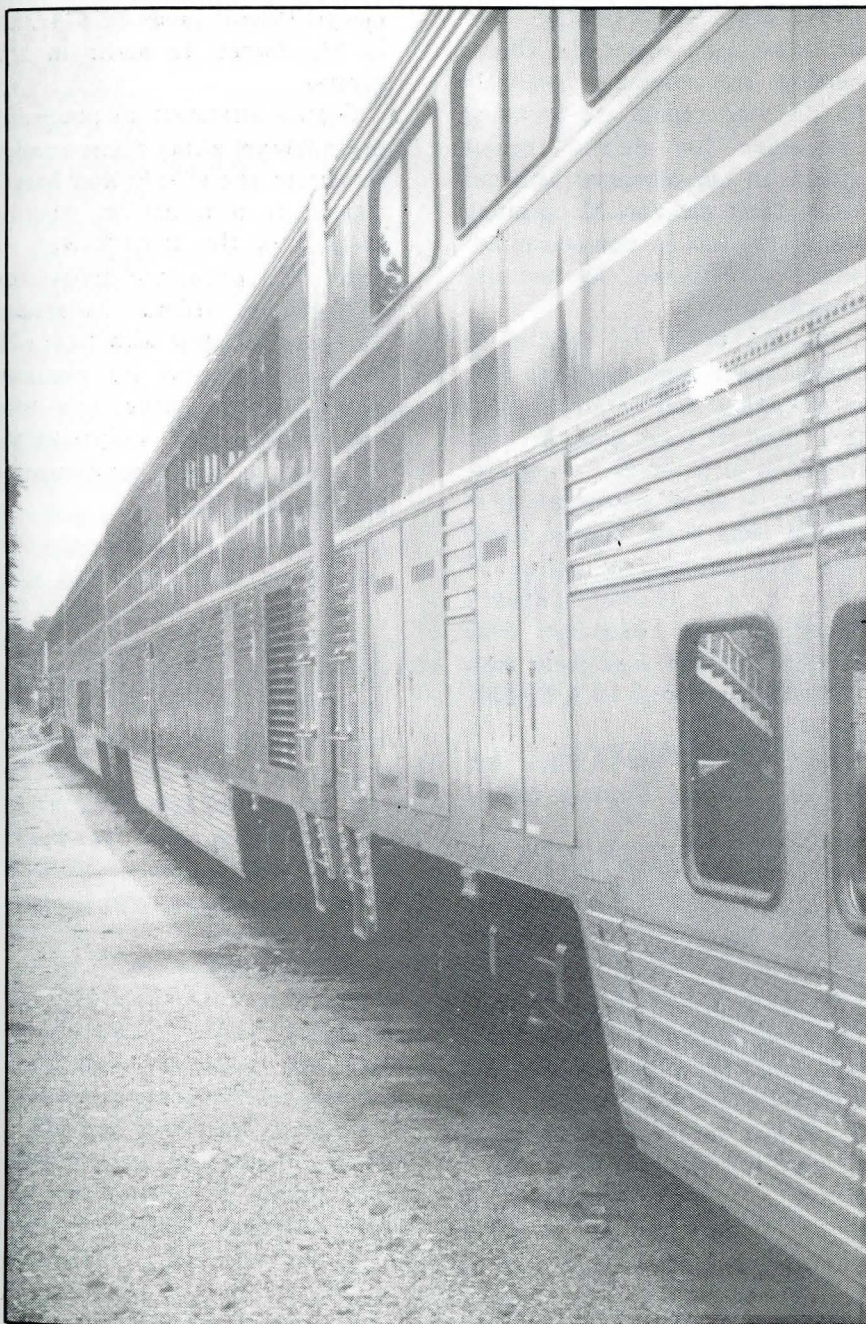
1983 and was completed in July 1984. A rehabilitation project on the Jackson to Delta short line was also approved. An agreement on this project (totaling \$341,646) was entered into in September 1984 with actual work expected to be completed in the fall of 1985.

Missouri's Amtrak 403(b) rail passenger service continued in operation. The "Ann Rutledge," under a match funding ratio of 65 percent state/35 percent

federal, carried 76,362 passengers, an increase of 1.2 percent from 1983 with an average on-time performance of 75 percent. The "St. Louis/Kansas City Mules" (under same ratio as the "Ann Rutledge") carried 61,374 passengers in 1984, an increase of 14 percent from 1983 with an average on-time performance of 73 percent.

Other activities revolving around rail passenger service during 1984 included extending

Amtrak service from St. Louis to Centralia, Illinois. This new service (known as the "River Cities") used an extension of the "Mules." Preliminary work started on a new station in Kansas City, and proposals were reviewed concerning a new passenger station in St. Louis, possibly interfacing with a light-rail system. In addition, proposals were reviewed concerning various route extensions to Oklahoma City, Omaha and Hannibal.



TRANSIT

The transit unit assists in the planning, development and operations of public transit systems and specialized paratransit systems in the state. This function is carried out through administration of state and federal programs relating to general public transportation and specific programs for the elderly and handicapped.

The Missouri Elderly and Handicapped Transportation Assistance Program provides state financial assistance for nonprofit organizations offering transportation services to the elderly and handicapped at below-cost rates. In 1984, \$537,177 in state general funds were matched with approximately \$2,148,708 in federal funds to subsidize elderly trans-

portation services. In addition, \$350,765 in state general funds were matched by \$350,765 in county, city or other local funds to provide essential services for other transportation disadvantaged, especially employees of sheltered workshops. Total transportation funding generated by this program was approximately \$3,300,000. More than 1,200,000 special transit trips were produced through this program.

Transit also administers funds made available by the U.S. Urban Mass Transportation Act of 1964, as amended. Under Section 18, money is available for planning, capital and operating assistance for public transit systems in non-urbanized Missouri areas. There are now 31 operating transit projects in non-urbanized areas of Missouri, an increase from 28 in 1983.

During 1984, \$2,484,568 in federal funds were approved for local capital and operating projects. Federal funds may be used to match local funds for capital purposes on an 80 percent federal/20 percent local basis. Federal funds also may be used to defray 50 percent of a transit system's operating losses. Passenger trips provided in 1984 were more than 1,780,000 compared to 1,590,000 in 1983.

Section 9 of the UMTA Act provides federal formula capital

and operating assistance to transit systems in urbanized areas (more than 50,000 in population). The Department administers this program for Columbia, Springfield, St. Joseph and Joplin. In 1984 the Department approved for payment \$3,496,731 in federal aid to the transit systems in Columbia, Springfield and St. Joseph.

A major development occurred in St. Joseph with the city taking over the operation of the privately owned transit system. The Department was able to give supplemental federal funds of \$782,000 to St. Joseph to assist in this process.

Capital assistance to nonprofit organizations giving transportation service to the elderly and handicapped is provided by Section 16(b)(2) of the UMTA Act. In 1984 the program provided \$590,480 in federal assistance. This was matched with \$147,620 in local funds for the purchase of 42 vehicles, wheelchair lifts, ramps and similar equipment for 25 elderly and handicapped organizations.



WATERWAYS

Waterways provides technical assistance to Missouri port authorities in promoting private capital investment, in increasing the volume of commerce and in the establishment of a free trade zone within their port districts. Every city or county situated upon a navigable waterway may form a port authority. Eleven port authorities had been formed along the Missouri and Mississippi Rivers prior to 1984. The Department is frequently contacted by interested communities concerning the port authority program.

During 1984 the Foreign Trade Zone Board, an agency of the United States Department of Commerce, approved the designation of Foreign Trade Zone No. 102 and Subzone No. 102A in St. Louis County. Promotional activities for the zones have been initiated by the St. Louis County Port Authority. However, actual operation of the zones had not begun prior to the end of 1984.

In addition to providing technical assistance, funding was also provided to assist port authorities in the administration of site development. During the year \$325,100 in grants were spent by nine port authorities and the Bi-State Development Agency (the coordinating agency for the Port of Metropolitan St. Louis). These funds are used by the recipients for managerial, engineering, legal, research, promotion, planning and other non-construction related expenses.

During 1984 five port-related development projects were funded by the issuance of bonds under the \$600 million statewide bond program.

PORT SITE DEVELOPMENT GRANTS

Port Authority	Amount
Kansas City	\$ 37,900
Howard/Cooper County Regional	29,400
St. Louis County	25,000
St. Louis City	19,600
Bi-State Development Agency	15,400
Jefferson County	19,300
Southeast Missouri Regional	56,700
Mississippi County	31,200
New Madrid County	35,500
Pemiscot County	<u>55,100</u>
TOTAL	\$325,100

BOND ISSUE PROJECTS

Port Authority	Project	Amount
St. Louis City	Reconstruct north end of dock at the foot of North Market (Phase II)	\$ 1,013,839
St. Louis City	Construct roads, sidewalks and infrastructure on the St. Louis riverfront from Poplar Street Bridge north to Carr Street	1,050,000
St. Louis County	Complete extension of Hoffmeister Avenue from Broadway to the old National Lead facility	1,050,000
Southeast Missouri Regional	Complete construction of an access road from Route N into the Grays Point Port Site east of Scott City	711,600
New Madrid	Land acquisition and construction of Slack Water Harbor port and access road	<u>716,800</u>
TOTAL		\$ 4,542,239

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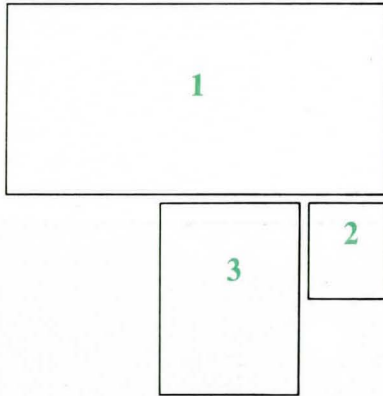
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Finances





- 1 *Materials and Research Division offices test and inspect all the materials used in the construction and maintenance of the highway system.*
- 2 *Disbursement and Cost Distribution Accountant Mildred L. "Mim" Stankowski, MHTD September Employee of the Month and State Employee of the Month*
- 3 *Motorist safety continues to be a top priority of the Department. Gigantic barrels form a crash cushion that could help protect motorists from serious injury. This safety device is usually placed in the V-area where two roadways separate.*

Receipts

BASIC REVENUE:

Motor Vehicle License	\$ 130,822,382.99
Motor Bus & Truck Fees	3,628,997.61
Motor Vehicle Use Tax	29,919,710.27
Drivers License Fees	8,246,093.87
Reciprocity Fund Interest	253,657.11
Motor Vehicle Inspection Fees	2,064,957.00
Motor Fuel Tax	157,015,913.34
Vehicle Sales Tax	<u>47,126,385.63</u>

Subtotal

\$ 379,078,097.82

INCIDENTAL RECEIPTS:

Refunds-Highway Fund	85,837.17
Refunds-Road Fund	14,441,474.92
Political Subdivisions	<u>783.00</u>

Subtotal

14,528,095.09

FEDERAL REIMBURSEMENT:

Federal Highway Administration	267,339,777.21
Corps of Engineers	<u>19,699.25</u>

Subtotal

267,359,476.46

MISCELLANEOUS ESCROW FEES

407,226.70

INTEREST INCOME-ROAD FUND

12,353,582.24

TRANSPORTATION REVENUE:

General Revenue Fund	3,946,279.12
Federal Fund	5,355,441.83
Transportation Trust Fund	476,024.04
Aviation Trust Fund	<u>212,294.23</u>

Subtotal

9,990,039.22

MISSISSIPPI RIVER PARKWAY COMMISSION

8,707.00

THIRD STATE BUILDING FUND

1,446,559.31

THIRD STATE BUILDING TRUST FUND

2,285,621.33

TOTAL RECEIPTS

\$ 687,457,405.17

Disbursements

CONSTRUCTION		\$ 354,258,109.85
MAINTENANCE		161,576,923.00
ADMINISTRATION		37,134,515.33
REFUND OF MOTOR & AVIATION FUEL TAX		6,391,407.09
O.A.S.I.		7,586,952.16
TRANSPORTATION EXPENSES:		
Administration	394,140.83	
Transit	5,656,106.92	
Rail	2,986,475.28	
Aviation	482,000.53	
Water	336,845.34	
Subtotal		9,855,568.90
MISSISSIPPI RIVER PARKWAY COMMISSION		8,707.00
THIRD STATE BUILDING FUND		1,446,559.31
THIRD STATE BUILDING TRUST FUND		2,285,621.33
OTHER STATE DEPARTMENTS		88,703,367.50
TOTAL DISBURSEMENTS		\$ 669,247,731.47

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